March 1946

CONSUMERS' RESEARCH

Bulletin

ORGANIZED TO SERVE CONSUMERS

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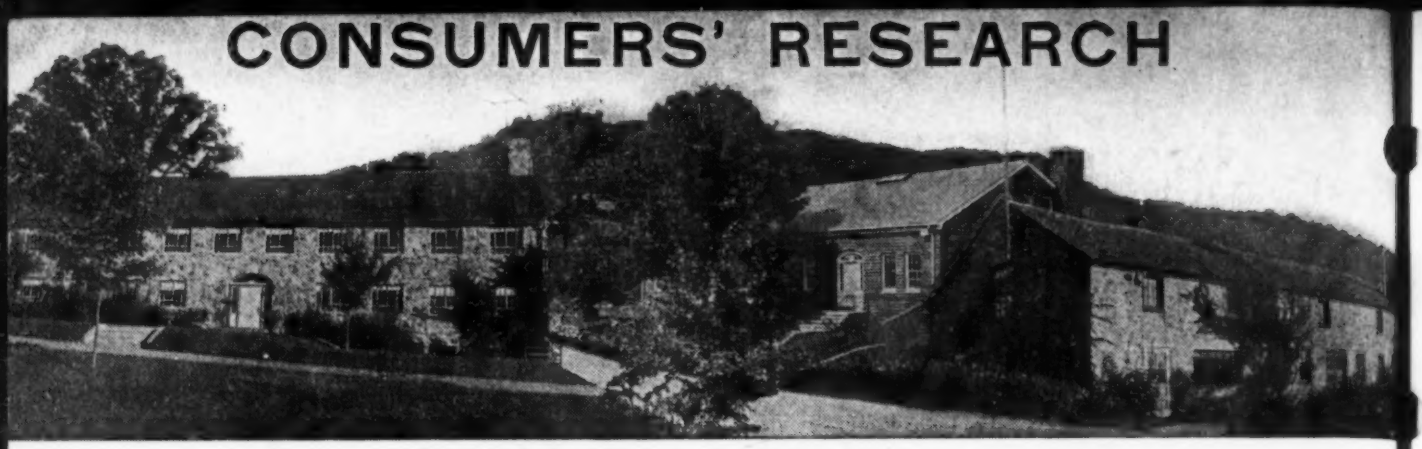
CONTENTS

CONSUMERS' RESEARCH



Vol 17 • No. 3 **BULLETIN** March 1946

Off the Editor's Chest

CONSUMERS, who in the years immediately preceding World War II had what now seems like an almost infinite variety of good-quality products to choose from, now find in the stores a very meager array of needed items so low in quality that even those who merchandise the articles are apologetic. As one chain store executive put it: "We've just experienced a new high in Christmas business and hit a new low in merchandise values."

One textile trade columnist sets forth his belief that only a few people have any conception of quality and that most would rather be left in ignorance on this point. He writes, "The better grades of merchandise are mediocre and the popular price lines are terrible. The Government sponsors low end or price appeal merchandise but I doubt if such merchandise represents a good buy for a poor man. Much of this stuff is trash and the money spent on it is thrown away. . . Merchants do not claim to guarantee workmanship or quality as these terms were once stipulated. It isn't necessary, nobody expects it, the majority of customers wouldn't know quality if they saw it."

If this indictment of consumers' sense of discrimination is widely valid then those who have been teaching courses in consumer problems and consumer economics in the schools have failed woefully in their tasks. It is true that the subject is comparatively new, and there are a good many schools, in some regions, where consumer problems are not yet taught.

Another difficulty is not that there is a lack of material available, but that the subject has been oriented around a "social science" point of view and a concept that no longer has any basis in actual conditions of the present market. It was customary in some courses to lay great stress on the need for sales resistance to high-pressure advertising and over-bombastic claims, but mere resistance to being sold is poor preparation for equipping a potential consumer with discrimination and a knowledge of just *what constitutes quality* and *how to recognize it* in the various fields in which he must make purchases of things he needs.

It has been more fun and secured better publicity to debate the general topic whether or not advertising benefits the consumer or is "economically sound" (an actual title of a topic assigned for study and discussion), or whether advertising increases the purchasing power of the dollar. The assembling of theories and opinions is always more attractive than learning the chemistry and engineering necessary to determine that adding moth balls (the essential ingredient of most gasoline "dopes") to gasoline will not improve the miles per gallon that any make of car can do on any brand of gasoline to which they have been added, or learning to detect in particular brands of toilet soap the presence of free alkali, which is one of several factors that determine whether or not a given brand will be irritating to the skin —no matter what the advertising claims.

No discussion of whether or not advertising is economically sound or increases the purchasing power of a consumer's dollar is going to be of the slightest help in picking a high-quality toilet soap,

(Continued on page 25)

Scientific and Technical Experts and Editors: F. J. Schlink, R. Joyce, M. C. Phillips, A. R. Greenleaf, and Charles L. Bernier. Editorial Assistant: Mary F. Roberts.

Symbols used to indicate sources of data and bases of ratings: A—recommended on basis of quality; AA—regarded as worthy of highest recommendation; B—intermediate with respect to quality; C—not recommended on basis of quality; cr—information from Consumers' Research's own tests or investigations; 1, 2, 3—relative prices, 1 being low, 3 high. Note that price and quality are completely differentiated in CR's listings; **a quality judgment is independent of price**; 45. 46—year in which test was made or information obtained or organized by the staff of Consumers' Research.

It will be advantageous if you will, whenever possible, send prompt notice of change of address at least a month before it is to take effect, accompanying your notice with statement of your old address with name in full. At least three weeks' notice must be given in any case. This rule, however, regarding long advance notice does not apply to military personnel.

¶*CR will, of course, gladly change addresses for men and women in the services as often as required by changes in station and other circumstances.*

★★★For a brief cumulative index of 1946 BULLETINS preceding this issue, see page 34.

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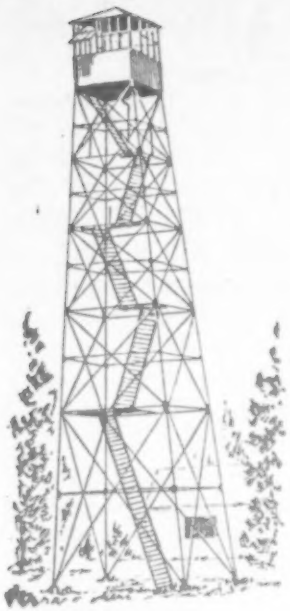


The Consumers' Observation Post

RACKETS AND GYPS to separate the newly released soldier from his discharge money and civilians from their savings and war bonds are on the increase. The eighty Better Business Bureaus throughout the country have been assigned the task of carrying out a program of protection of wartime savings on a national scale recently instituted by some 300 business leaders with the approval of the U. S. Treasury Department. The object of the campaign is to make the average citizen and the returning GI less gullible and less susceptible to the wiles of slick racketeers. Some of the old rackets that are being revived in new forms are worked by salesmen for subscriptions to magazines, nylons, electrical appliances and other scarce commodities, who take orders and cash and decamp without making delivery. Veterans are putting up savings or newly-acquired loans as deposits on businesses which they wish to buy, only to lose their money in some cases because the inventory supplies are not as represented. "Let the buyer beware" should be more than just a phrase in an economic textbook these days.

* * *

BUTTER will be in sufficient supply by the end of the summer to satisfy consumer demand, predicts Professor S. W. Mead of the University of California. Butter substitutes will, in the Professor's opinion, become more plentiful before that time, particularly if shipping is soon available to transport such items as coconut oil from Pacific areas. This oil in pre-war days was one of the main constituents of oleomargarine.

* * *

THE PRESENT CLOTHING SHORTAGE is causing returned servicemen to have their GI clothing dyed. The Omaha Dye Works, a wholesale dyeing house, was so swamped with such orders, according to an early January issue of the Wall Street Journal, that it could accept no more business for the rest of the month. The price for turning a service shirt into another color such as dark blue, green, brown, or red is reported to be around $2 and the same price is charged for dyeing a pair of trousers. Coats, mackinaws and battle-jackets come somewhat higher. Tailors help eliminate the military appearance by removing belts, shoulder straps and pleats.

* * *

PROPER ELECTRICAL WIRING and an adequate number of electrical outlets are important factors to be provided for in the building of new homes. Enough circuits should be planned so that there will be no overloading to cause interrupted service or blinking lights. The National Adequate Wiring Bureau suggests one double unit for every twelve feet of unbroken wall space and one outlet in any wall space exceeding three feet in width. Four circuits are suggested: one for general lighting, radio, and small appliances; one for kitchen, laundry and dining room appliances; a third for built-in appliances such as electric heaters; and a fourth for future expansion. It has been estimated that although the average household bill for electricity runs about the same as it did in 1929, the home use of electricity for lights and appliances is three times as great as it was fifteen years ago.

* * *

A LILAC PERFUME selling for $16 an ounce was preferred by only 56 percent of students making a test survey to one selling for 50 cents an ounce, reports Science News Letter. It appears that when 69 women students at the University of California sampled six different perfumes, no consistent relation was found

between price and preference. In the case of gardenia perfume, 55 percent preferred the 50-cent variety to one selling for $8 per ounce. Someone should call this study to the attention of the GI's abroad who are reported to be paying $60 to $100 an ounce for something supposed to be pretty special. They can undoubtedly get perfume that will be just as pleasing for a lot less in this country.

* * *

SILK has certain advantages over synthetic fibers such as nylon and rayon for some garments, in the opinion of a distinguished textile chemist. He points out that silk makes excellent women's hose and a far superior necktie. In the words of the textile trade, silk fabric has a warm, full "hand," while a similar nylon fabric has a cold, somewhat clammy hand. Silk also has somewhat superior resiliency, modulus of elasticity, and moisture-absorbing characteristics as compared with nylon.

* * *

PRICE CEILINGS were put back on citrus fruit early in January after the OPA had taken controls off on November 19, 1945. It apparently just isn't possible to persuade the OPA that the war is over and the "duration" should not last indefinitely. Some of their critics claim that the OPA timed the lifting of price control to be just at a time when holiday demand and crowded transportation facilities would put pressure on prices to force them upward. The result was that the natural operation of the law of supply and demand worked to provide what was intended to appear as a "horrible example" of what might be expected when the OPA lifted its sheltering arms.

* * *

THE CHICKEN POPULATION is so numerous that poultrymen have been warned to market their flocks during the first quarter of 1946, to avoid being caught between high feed costs and lower consumer prices. In one large broiler area, prices were down as much as 9 cents a pound under ceilings at the end of 1945. All of which is good news for consumers who are not tired of eating chicken.

* * *

SHOES are still not up to pre-war quality, and may not be for some months or even a year from now. Conservation of shoe leather is urgently called for. To do this, it is important to wear rubbers or galoshes in wet weather, for shoe soles go through with abnormal rapidity when they are worn in wet condition. Shoes with damp soles should be allowed to dry thoroughly before they are worn, and change made to the "extra" pair.

* * *

MINIMUM STANDARDS should be established for each "class" of radio set, and the label attached to each set should describe objectively the receiver's output, sensitivity, and selectivity. That suggestion comes from Joseph Gerl, President of Sonora Radio and Television Corporation, who points out that if consumers are told about the significance of the standards, they will demand better built radios. The anticipated sharp post-war competition may bring about an appreciation on the part of some of the better and more responsible manufacturers of the desirability of following Mr. Gerl's suggestion. The industry will almost certainly be faced with the need of taking steps to prevent all radio products from getting a bad reputation because of the outstandingly poor performance of some manufacturers whose trade ethics are low or who do not care to spend money on professional services to make sure that their radio receivers are well designed, free from shock hazards, and other easily avoided defects.

* * *

REPAIRING OF KITCHEN POTS AND PANS, food containers and utensils should not be permitted to be done by unqualified persons, warns New Hampshire Health News. It appears that some "retinning" of utensils used by restaurants and dairies has been done by itinerant workmen. Ignorant of the hazards involved, they have used for retinning an alloy consisting of approximately equal quantities of lead and tin, a practice that is most dangerous to health and rightly prohibited by the sanitary food laws of New Hampshire. Indeed, such practice should be forbidden by food control laws and regulations in every state, because of the danger of contamination of food with lead, and the permanent injury to health that small traces of lead in food can cause. The New Hampshire publication warns against patronizing on-the-spot retinning concerns unless

(The continuation of this section is on page 37)

Pressure Saucepans

SMALL PRESSURE SAUCEPANS which first began to be popular in 1940 are again appearing in department stores and house furnishings stores all over the country, though not many are yet available, and those offered tend to be snapped up quickly by housewives who have waited a long time to make the purchase. Greatly reduced time of cooking is probably the greatest appeal of these pans for the average housewife. Cooking time will be 1/4 to 1/20, or even less, that necessary when cooking is done in ordinary saucepans. For example, wax beans can be cooked in two to three minutes under pressure, halved potatoes in eight. Pot roast of beef cooks in a pressure pan in 8 to 10 minutes per pound, while ordinary cooking methods require from 30 to 45 minutes per pound. Such savings in time and stove-top space and in cost of fuel are, of course, very attractive to the busy housewife.

Mirro-Matic Pressure Pan

Retention of Flavor and Vitamins

Some foods taste better when cooked in a pressure saucepan, and have a better appearance as well. Peas are said to be improved in color by pressure-saucepan cooking, and were judged to be superior to those cooked by the "open kettle" methods in flavor, texture, and odor. So far as these subjective qualities are concerned, carrots, beans, spinach, turnips, and all green vegetables except asparagus were found to be of about equal quality to those cooked in the ordinary way.

Strong-juiced vegetables, such as broccoli, cauliflower, cabbage, and onions, however, according to some authorities are better when cooked in the ordinary way. Cauliflower and broccoli, for example, may become somewhat yellow and develop strong flavors if overcooked, as may easily occur with pressure cookery. Nevertheless, because of the desirability of minimizing the amount of odor disseminated through the house when cooking strong-flavored vegetables, some consider it well worth while to prepare such vegetables as cauliflower, broccoli, and some others, in the pressure saucepan. These vegetables, however, can very easily be overcooked, on account of the great reduction of total time required when cooking in a pressure saucepan. Therefore, time of cooking ***must be much more closely regulated*** than many would suppose to be necessary (see also col. 1, page 6, where need for complete removal of air, which is a factor in accurate timing, is mentioned). Even a half minute can make a practical difference, and homemakers need to become accustomed to this point about pressure cookery, and learn by experience to end the process at just the right point to suit their own family's tastes in "doneness."

Cooking in a pressure saucepan has been found to be one of the most satisfactory of cooking methods for the saving of food values. Since little water is used, there is little loss of minerals. Phosphorus is retained better in pressure-cooked vegetables, and there is evidence that vitamin C is retained better, also. In a study made of vitamin C content of parsnips, for example, this vegetable, when cooked in a pressure saucepan, lost only 9 to 10 percent of vitamin C (as against 34% when cooked in stainless steel and 29 percent in aluminum open pans). Care should be taken, however, not to use excess water and not to overcook vegetables in a pressure saucepan or permit them to stand after cooking (for overcooking and delay in serving cause an increased loss of vitamin C).

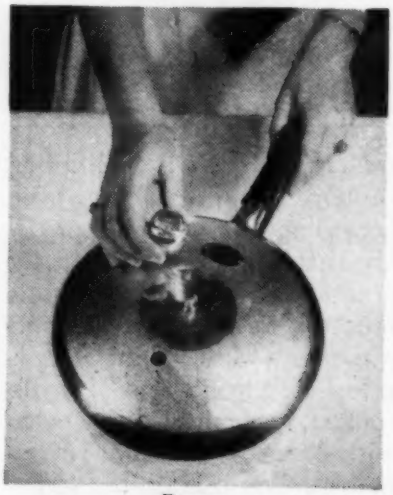
Some people consider that pressure-cooked foods have an objectionable flavor, although others who have used pressure cookers for years have never had any complaint in that respect. One state government agency advises that in pressure-cooking pinto beans (which materially shortens the cooking time) continued cooking for a few minutes in an open kettle will remove the "pressure cooker flavor."

Wear-Ever

Using the Pressure Saucepan

In use, pressure saucepans are easy to handle and convenient to operate, and safe if properly used and cared for. *Read the manufacturer's directions carefully, and follow them.*

The reason for using a pressure pan for cooking is to permit obtaining temperatures higher than that of water boiling in an open pan, which is a fixed temperature (212°F at sea level, 210°F at 1000 feet elevation). The lid must fit tightly to prevent loss of steam (and thus reduce loss of liquid with accompanying risk of the pan's running dry). The weight gauge maintains the pressure and temperature. A fact not commonly known is that if there is air remaining in the saucepan, the temperature corresponding to a given indicated or controlled pressure may be considerably lower than normal during at least part of the cooking period. For this reason, it is necessary for accurate results in cooking to be sure that the air originally inside is completely exhausted; this can be assured when clear steam issues from the vent tube or orifice. In the saucepans tested, a safety plug is provided to blow off and release the pressure in case the weight gauge for any reason fails to permit escape of a sufficient amount of steam when an excessive pressure is reached. The correct and reliable operation of this safety device is basically essential, for no pressure vessel containing live steam is safe without a reliable and sensitive safety valve.



Presto

In operation, water inside the cooker is heated and steam generated and the air displaced from the pan by the steam rising from the contents of the cooker. The weight is then put in place on the vent tube of the cooker and when the desired pressure is reached (follow manufacturer's instructions for this), the pressure (and temperature) is maintained for the length of time required. Some of the weights serve a dual function, being equipped with a pressure-*indicating* hand or pointer, as well as providing for *release of pressure* above the amount allowed by the weight and the size of the orifice which it closes.

In the opinion of Consumers' Research, it is desirable for saucepans to have an indicator or pressure gauge of some sort, so that the housewife can tell at a glance whether the pressure is rising or falling or being maintained within the pan. Arrangements whereby one must listen to hear that steam is venting once every 15 seconds, for example, as one maker's directions provide, are not at all satisfactory. A combination of a slight hissing sound and a visible indicator gives a workable indication to the user. Of the saucepans tested, only the *Presto* and the *Wear-Ever* had visual pressure indicators, which are no substitute for a proper pressure gauge with well-marked graduations. The *Presto* had an indicator on the weight-gauge; the *Wear-Ever* had a small pin or rod which rose gradually and projected about ¼ inch above its base when 10½-lb. pressure was reached.

Convenience in Use

Some saucepans are, of course, easier to use than others, and may have other advantages of design.

Both the *Mirro-Matic* and the *Presto* which were tested were judged to open and close easily and conveniently. They had heavy lids which were placed in position on top of the cooker base and turned into position. Both had rubber gaskets to provide tight sealing which would have to be replaced from time to time, perhaps after two or three years' service or more; the cost of the replacement gasket will be 25 or 50 cents. The *Mirro-Matic* had guide marks (ar-

rows) on the lid and the pan which made it easier to place in the correct position for closing than the *Presto*.

The cooker identified in the listings as the *Lifetime* had an oval lid which had to be slipped into the cooker at an angle, then raised and turned into correct position and closed by means of a cam. There were no guide marks of any kind, and it was difficult at first to get the lid in exactly the right position for closing. The *Universal Minute Savor* pressure cooker also had an oval lid. Although both the lid and the pan had guide arrows to indicate the correct position to start closing, the lid of this pan did not go into place too easily. To close, the lid was inserted in the pan and turned so that the handles were together, while a pin or pivot on the handle of the lid was placed in a depression in the cooker handle. The handles were then squeezed together to allow a hook on the cover handle to catch on a projection on the cooker handle near its inner end. The cover of the *Universal* had a very thin rubber-like lid gasket around its top edge which is easily susceptible to accidental damage by coming in contact with a hot stove burner.

Another type of closure was found on the *Wear-Ever*, which is made under the Vischer patent. This pan had a flexible lid which was inserted inside the cooker and pressed into position. The correct position was indicated by placing the pin or pivot on the handle into a depression in the cooker handle. A catch on the upper handle was turned to encircle the lower handle and so hold the lid in position.

In use, the flexible lid must be handled carefully to prevent its becoming bent or injured, otherwise it might not fit tightly, and steam would escape. On account of the vulnerability of this type of lid, one careful user runs water through the vent, wipes the lid, and hangs it up by a cord tied around the handle as soon as she is finished cooking. In this way she knows the vent is never clogged with food and the cover is not subject to the risk of damage already mentioned.

The *Wear-Ever* saucepan has one important improvement over the *Flex-Seal* saucepan made by Vischer Products Co., and tested by Consumers' Research in 1941. The gasket, instead of being on the lid, which is open to objection on account

Universal Minute Savor

of its susceptibility to damage in use and handling, is inside the rolled edge of the body of the cooker. In this location, it is well protected from possible damage, although replacing it is a factory operation, when the gasket has become damaged, or deteriorated with time and use.

Unbranded cooker

Any method of closing which requires the lid to be introduced inside the saucepan has a disadvantage, in that it involves a necessary decrease in the maximum amount of food that can be cooked in the pan at a time, because of the space required to place the lid in position. The *Wear-Ever*, *Universal*, and the unbranded cooker all had this disadvantage. It is perhaps not important, however, for small families or even for large ones, if, as a rule, full capacity of the cooker is not utilized.

Care Needed to Assure Safety

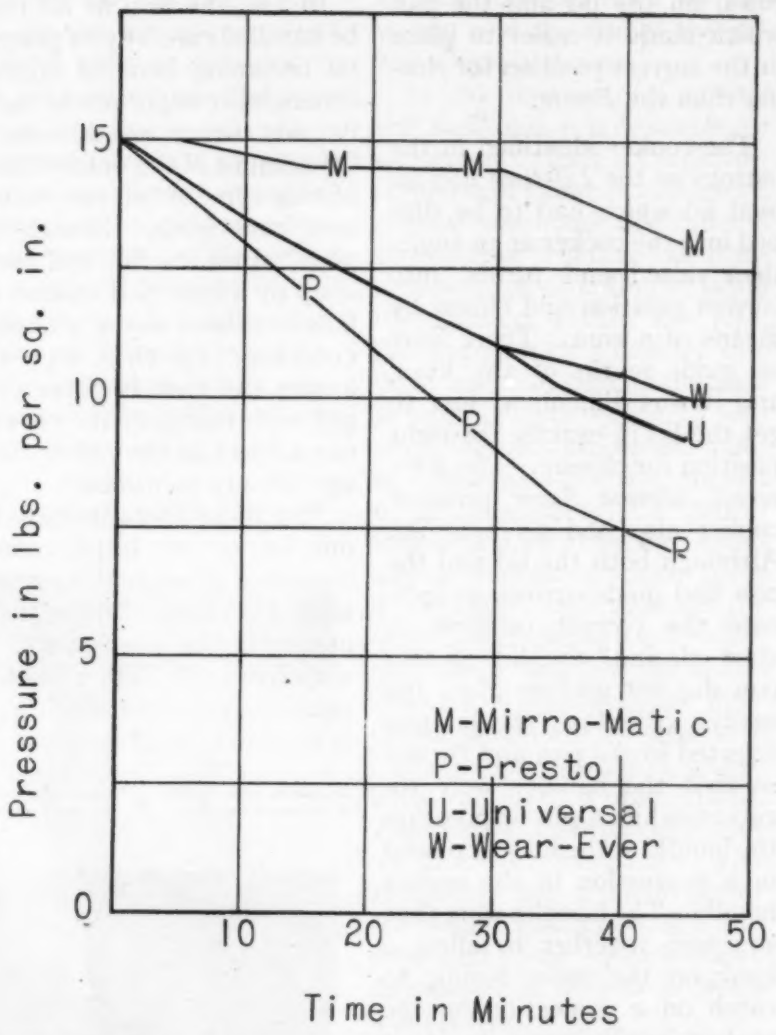
The vents on all pans should be kept clean and free from food, dirt, and incrustations of any kind, and the gasket should also be kept clean and free from grease.

Sometimes the escape vent becomes plugged with some leafy or glutinous food material, and in that case there may be no escape of steam to warn the user of the pressure that remains within. If there is any reason to suspect that there might still be pressure remaining, pass a wire or a broom

straw downward through the orifice on the cover so as to make certain there is a clear opening to the interior. All the saucepans tested provided means for minimizing the probability of the plugging of the inner end of the orifice by food material. Housewives may consider these means add to the difficulty of cleaning the appliance, but the slots and the extra holes are wise and necessary precautions for safety. The arrangement on all the *A*- and *B*-rated cookers was believed to be satisfactory, but that on the *Presto* was considered to be slightly less certain than the others to prevent an accident that might occur as a result of clogging under unusual conditions.

Some are perhaps tempted to try to open a pressure pan while there is still pressure within. It should be kept in mind at all times that if there is the slightest pressure remaining—even a pound or two on the mass of water and food in the cooker—there is grave danger of serious burns being received with hot food thrown about the kitchen due to the rapid evolution of steam when the pressure is dropped quickly. *Be sure the vent weight is removed* (never take off the lid with the weight-gauge still in place). If steam is still escaping from the vent, *wait until it stops*. If, after steaming stops, the cover cannot be removed easily, pour cold water over the pan. Then try again. If this fails to release the cover, set the pan in cold water and wait about three minutes.

Ratings of pressure saucepans are based on the performance of the pans as received. Tests made included release pressures and operative temperatures of safety devices,



Graph showing the pressure drop in the Presto (P), Mirro-Matic (M), *the* Universal (U), *and* Wear-Ever (W) *saucepans tested. The line having the lowest slope showed the least leakage (best pressure retention).*

★

ease of operation, behavior in practical use, and accuracy of pressure indications. Ratings are cr46.

B. Intermediate

Mirro-Matic Pressure Pan (Aluminum Goods Manufacturing Co., Manitowoc, Wis.) $12.95 (East); $13.95 (West). Capacity, 4 qt. Includes cooking rack, vent cleaning wire, extra fusible plug (emergency overpressure release), and a wrench for the replacement of this. (It is understood that in future production the design of the fusible plug is to be altered to make removal and replacement simpler and to obviate the need for the special wrench.) Sheet aluminum, drawn or stamped, smoothly finished inside. The weight which determines the working pressure can be turned to various positions to limit pressure to 5 lb., 10 lb., or 15 lb., per sq. in. (Actual control pressures were found by Consumers' Research to fall within ½ to 1 lb. per sq. in. of the intended values, which on present information would appear to be close enough for the purposes.) Lid-seal very satisfactory. Auxiliary safety device (fusible plug) released at a sufficiently low temperature (and pressure) to be judged safe. Had neither pressure indicator nor gauge, which would be a very useful addition. With suitable pressure gauge would warrant an *A* rating.

Presto (National Pressure Cooker Co., Eau Claire, Wis.) $12.50 (East),

$12.95 (West). Capacity, about 4-1/10 qt. Includes cooking rack. Cast aluminum smoothly finished inside. This cooker has a pressure indicator (normal cooking pressure corresponded to 10 lb. per sq. in.). Safety release allows steam to escape—giving a degree of pressure regulation at 17 lb. Seal satisfactory, except for leakage at neoprene plug—auxiliary safety device. This plug when tested failed to release at a pressure of approximately 52 lb. per sq. in., whether with air or steam. Failure to release internal pressure at this figure represents a potentially serious fault, since pressure cooker explosions have often occurred, sometimes with serious results. It is to be hoped that *Presto's* manufacturer may decide to adopt an entirely different type of safety pressure-release plug (for example, a fusible type of plug such as is used on the *Mirror-Matic* pressure saucepan and on some pressure canners) to improve the safety factor of the *Presto* saucepan. With correctly designed release plug would warrant an *A* rating.

* * *

Wear-Ever (Aluminum Cooking Utensil Co., Philadelphia) $13.95. Capacity, about 4 qt. when full, but useful capacity about 3 qt. Loss of useful volume is due to the necessity of inserting the lid part-way into the interior of the pan in putting it into place. Sheet aluminum, with a flexible stainless steel cover. The working pressure determined by the weight furnished was about 14½ lb. per sq. in. Indicator pin began to rise at 9½ lb. pressure, and was fully up at 10½ lb. pressure. Auxiliary safety device (rubber-like plug) released at a sufficiently low steam pressure (and temperature) to be judged safe. Seal was satisfactory, except for leakage around safety plug and at joint of handle and cooker lid. Plastic (Bakelite) knobs at top of weight-gauge and on handle lock, which remained cool during cooking process. ¶Judged relatively convenient to use. Chief disadvantages of this cooker were the loss of useful cooking space already mentioned, lack of good pressure indicator, and the care required in handling and storing the lid.

Universal Minute Savor (Landers, Frary, & Clark, New Britain, Conn.) $11.95. Capacity, about 4 qt. when full, but useful capacity a little less than 3 qt. See comment on *Wear-Ever*. Aluminum. The working pressure determined by the weight furnished was 14½ lb. Auxiliary safety device (fusible plug) released at a sufficiently low steam temperature (and pressure) to be judged safe. Seal was satisfactory. ¶Considered relatively inconvenient in practical operation. In use, it was especially difficult to determine whether or not the correct pressure was being maintained. On the other hand, when the pressure was too great, the escaping steam made a loud and disturbing noise which might bother many housewives. Had neither pressure indicator nor gauge.

C. Not Recommended

Pressure Saucepan, unbranded but which appeared to be the *Lifetime Pressure-Seal* saucepan and was so identified by the sales clerk at one of the largest New York City department stores—Gimbel Bros. $11.95. Capacity was not well utilized (see comment on *Wear-Ever*). Although nominally of 3-qt. capacity this cooker held effectively only about 2 qt. Lid did not fit correctly so that pressure could not be built up within the pan.

★ ★ *Concrete: Improving Its Resistance to Wear* ★ ★

When concrete floors are being constructed there are a few simple methods which, when followed, produce surfaces that afford exceptionally good resistance to wear. When concrete floors have not been so constructed, there are certain subsequent treatments which may be used to improve the wear resistance. When making a new floor, improved resistance to wear and to pitting results from using relatively dry concrete mixes. Damp-curing has also been found to increase resistance to wear. When high early strength cement is used, damp-curing is not so important. Troweling of the surface should always be delayed as long as possible—for three or more hours after placing the concrete.

A desirable treatment to improve resistance to wear of concrete that has not been damp-cured consists of three or four applications of sodium silicate (water glass). Commercial sodium silicate varies in strength from 30% to 40% solution and should cost about 40 to 50 cents per gallon. Before applying, it should be mixed with water in the proportion of about one part of sodium silicate to four of water. The floor surface should be prepared for treatment by cleaning to remove grease, dirt, etc., and then thoroughly rinsing with cold water. The floor should then be allowed to dry thoroughly before the first application of the sodium silicate. Each application should be allowed to dry, then scrubbed with clear water and allowed to dry before making subsequent applications. The National Bureau of Standards has studied various surface treatments of cement floors and has found either sodium silicate or aluminum sulphate to be most suitable to use for home treatments.

1946 CARS

The Crosley Car for 1946

ANTICIPATED production of the new *Crosley* car for 1946 is well above previous levels, apparently expressing the maker's conviction that there is a market for a small car in this country. In view of the current "state of the union," economically speaking, with prices of standard size cars well above pre-war levels, with buying power of money definitely threatened by loss of production through strikes and fiscal policies and tendencies in the government, the manufacturers of the *Crosley* may well be justified in their expectations. In addition to their main plant facilities at Cincinnati, Crosley Motors have obtained extra plant facilities at Marion, Indiana; the company is now offering approximately 125 dealerships for sales and service.

The body of the new *Crosley* car has been completely redesigned, but the important difference is the engine, which is of an entirely new and radically different design. While slightly larger than the previous car, the *Crosley* remains definitely a substandard vehicle in so far as size is concerned. Efforts have been made to round out or balance the proportions of the car (if illustrations in the publicity are real photographs and not faked wash drawings with the elongated wheelbase habitually used by the illustrators of the advertising agencies that prepare motor-car advertising). This improvement in proportions may be considered even more acceptable now that smaller wheels are being favored for standard size cars. (With respect to the earlier *Crosley*, objections were voiced to what was called the "roller skate wheel" appearance as compared to cars of normal size.)

Except for the great difference in size, the overall appearance of the *Crosley* is not unlike that of the new *Kaiser* and *Frazer* cars; the new *Crosley* design takes advantage of formerly wasted space above the tops of the fenders to gain additional body width. (Two inches wider than former *Crosley*.) The grille and frontal contours are similar to those of the pre-war *Studebaker* and *Willys* cars. The overall length is given as 145 inches, compared with 120 inches for the pre-war *Crosley*, with the wheelbase the same (80 inches compared with 110 inches to 118 inches for the "standard" small cars of the pre-war period). The "tread" is 40 inches or about 16 inches under standard tread or width between wheels on front or rear axle. The wheelbase of the *Crosley* is thus the same as that of the *Willys Jeep*, which, however, has the standard tread of 56 inches from center to center of tires measured across the car. The overall height is 57 inches.

Aside from the question of size, a second major objection to previous *Crosleys*, namely lack of performance,[1] has also been materially alleviated. In fact if the weight of the new car (about 1050 lb.), and horsepower are correct as stated, the acceleration and hill-climbing ability of the car with driver and one passenger should closely approximate that of standard cars such as the *Ford* or *Chevrolet* when carrying four passengers in addition to the driver. While the net weight of the car is said to be little more than that of the pre-war *Crosley*, the horsepower has been more than doubled according to figures released by the company.

To demonstrate that the body is actually of aluminum, the cars will be sold "natural" (probably with a matte finish) but will be painted by dealers to suit customers' desires, on order. Probably many purchasers will want to have a paint job done, at an extra charge of perhaps $30.

Theoretically the performance of the new *Crosley* should be about that of a car weighing around 3000 pounds and having an engine of about 75 horsepower. (This estimate must be somewhat diminished by the effect of the higher relative weight of passengers in a *Crosley* as compared with passengers in the 3000-pound automobile.) If gears are changed with the desirable frequency, it should be possible for the car to hold its own at least in town driving. The top speed of the new *Crosley* has been increased and is stated to be 65 miles per hour, so that 55 miles per hour should be a good maximum speed. The fuel tank capacity is 6 gallons, corresponding to a touring distance of 200 to 300 miles (according to *Crosley* announcement, fuel consumption will be 50 miles per gallon, at about 35 miles per hour, and 36 miles per gallon at 55 miles per hour).

Were it not for the fact that the engine is the outgrowth of

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[1]The performance factor of the 1942 *Crosley* was only 8.4 compared to an average figure of around 24 for the "big three" small cars, *Ford*, *Plymouth*, and *Chevrolet*. (The performance factor is a measure of the relative ability of the car to respond quickly and powerfully when the accelerator pedal is depressed. It is obtained by dividing the maximum horsepower of the car by its weight plus the weight of the passengers, and multiplying the result by 1000.)

more than three years of wartime development, the consumer who wants a small, light car might be advised against buying a *Crosley* until the car has been in production for many months. The many unusual features of the engine indicate a high level of development work and suggest that numerous difficult design and production problems were attacked and overcome before production could be started. While no one can predict with any degree of certainty what a new car will do in the way of standing up in hard service and freedom from mechanical and servicing troubles, it is reasonable to believe that these may be of no greater importance than those besetting the owner of any *new* make of automobile. Indeed, it is perhaps as likely that service trouble will be involved in details of the new aluminum body as in the engine, or perhaps in some mechanical detail of clutch or other transmission element.

It seems advisable to devote more space to describing the *Crosley* engine than would normally be justified, in view of its highly unusual and interesting design and the fact that it may be applied not only as the power plant for the *Crosley* car, but also as a light, convenient auxiliary unit for other purposes such as electric power generation, driving farm implements, etc. (when sold separately for these purposes), and still more importantly may serve as a pattern for future engines of other manufacturers. The engine comes closer to the design and type typical of British and European small high-speed cars than any engine which has been proposed for production in quantities in this country to date, including even the *Austin* (Bantam) engine, which possessed some of these characteristics. That a market for the engine separate from the *Crosley* car is anticipated, has already been indicated by *Crosley* publicity. In fact it would seem that unless such a market is obtained, it would be difficult to justify the great cost of developing the engine, for the car alone, even though the market for the car may be greater than prior to the war.

General specifications of the engine are: Bore 2.5 inches, stroke 2.25 inches. Four cylinders, water-cooled by forced circulation. Piston displacement 44 cubic inches (pre-war *Crosley* 35.3 cubic inches, 2-cylinder air cooled). Compression ratio 7.5 to 1. Brake horsepower, 26 horsepower for the standard engine at 5000 revolutions per minute (pre-war *Crosley*, 12 horsepower). Using 80 octane fuel, this engine is said not to knock under any driving conditions when using the 7.5 to 1 compression ratio. Overhead valves and overhead camshaft. Camshaft driven by vertical shaft and bevel gears at front end of engine. Five main bearings on crankshaft. Carburetor venturi diameter 11/16 inch (smaller than for the Navy-tested *Crosley* engine). Full pressure-lubrication to engine bearings, including 5 camshaft bearings. (Engines of similar design, six of which were built for and tested by the U. S. Navy, when directly connected to electric generators, developed 36 horsepower at 5600 revolutions per minute with 9 to 1 compression ratio, using 100 octane fuel.) Seat inserts under intake and exhaust valves. Pistons—aluminum alloy, cam ground, with floating piston pins held from abrading cylinders by aluminum pin-hole plugs, a practice, incidentally, which follows that used by *Rolls Royce*. The new design produces an astonishingly light engine, as its weight with accessories, including starter and generator, is only 138 pounds, the basic weight of the engine alone being 58 pounds. Specific fuel consumption at the speed of maximum torque, 0.48 pound per brake horsepower per hour.

The high speed characteristics of the engine (5000 revolutions per minute at peak horsepower) are believed not to be objectionable for two reasons: The short stroke (less than bore, which is unusual in American engines for automobiles, though not for 2-stroke cycle engines used as "kicker" engines for boats) keeps the piston rubbing velocities within reasonable limits. Second, the material used in the cylinders (noted later) should wear well if lubrication is adequate, as it should be, from known details of design which need not be described here. The fact that no rocker arms are used, as the cams operate directly against the cam followers or lifters, is reminiscent of the *Hispano-Suiza* airplane engine of World War I fame, and used later in Wright liquid-cooled engines. The method of driving the camshaft is also typical of in-line airplane engine practice.

The engine is the one known to automotive engineers for some years as the "Taylor" engine, and has been described in technical journals as the development of Lloyd M. Taylor, of Taylor Engines, Inc., in California. Its most unusual feature of design is the cylinder block, which is made up of some 120 pieces of steel tubing and steel stampings. These are copper-brazed (not welded) into an integral whole at a temperature above 2000°F after preliminary positioning by various means such as crimping, spot welding, etc. (Note: Brazing, also known as "hard soldering," is similar to soldering in that a metal different from the base material is caused to flow by means of heat over the surfaces to be joined. Because of the high temperatures used, the heat cannot be applied by an "iron" as in ordinary soldering but must be supplied to the parts to be joined by an external source such as a torch or by placing the parts in a furnace, and considerable skill and engineering knowledge are required in the operation in order that the joints shall be leakproof and strong. The alloys commonly used for brazing are brass, copper, and bronze, and in intricate and

important work where full strength must be assured, the pieces are surrounded by an inert atmosphere, such as one of hydrogen gas in order to prevent oxidation of the copper and steel by the high temperatures used.)

When the brazing operation is completed, the block is slowly cooled to about 1500°F, then "quenched" by gas flow to 1100°F. The rapidity of the quench determines the hardness of the cylinder walls and certain other parts of the block. The block may therefore be said to be heat treated to obtain hardness characteristics differing from those obtainable in a cast iron block. In addition to the cylinder block, several other parts, including the fan, generator, and water-pump pulleys are brazed together from steel stampings.

Numerous advantages accrue from a construction of this kind. Various kinds of steels may be used for cylinder barrels, valve guides, cam-follower guides (valve lifter guides), etc., to obtain the most desirable materials for the purpose, again not restricted by the limitations of cast iron necessarily used in the conventional manner of making the engine block of an automobile. For instance, the cylinder barrels are of hardened chromium-molybdenum steel, 1/16 inch thick. The water jacket is of low carbon steel. Valve seat inserts, which are brazed into the assembly, are of alloy steel.

Since the cylinder head is integral with the block, the block must be removed from the crankcase if valve grinding is required. However, the use of seat inserts, hardened and ground lifters, intake and exhaust valve heads of steel of 21% chromium and 12% nickel content with hardened stem ends (stems of SAE 3140 steel), would appear to indicate that valve grinding would seldom be needed. (In one of the Navy tests, the engine was run for 1200 continuous hours at a 35 horsepower output, which would confirm this opinion.)

In the *Crosley* method of adapting water cooling to this engine, the possibility of damage from freezing has been practically eliminated. Blocks are said to have been frozen solid without damage, in cold-room tests. To make this possible the sides of the water jacket are ribbed, permitting the expansion caused by freezing to occur without rupture of the cylinder walls or water jackets. The jacket is of material of but 20 gauge thickness (about 1/32 inch thick) so that the jacket undoubtedly is somewhat flexible, a factor which may tend to make the engine somewhat noisier than one possessing the advantage of the rapid vibration-damping effect of the relatively thick cast iron walls of the conventional engine. The weight of the finished block is a little over 14 pounds, which is noteworthy, since this weight includes the cylinder head.

To prevent rusting of the interior of the water jacket, it is coated with a clear hard plastic. Baked enamel was used in the jacket of the *Hispano-Suiza* engine, for the same purpose. (Lack of this sort of precaution caused considerable trouble from leakage of the jacket plates used on *Ford* 60 horsepower engines, as well as on some of the 85 horsepower engines of later design.) Since no section of the block is more than 1/8 inch thick, excellent heat transfer from the cylinder walls and combustion chambers to the cooling liquid is possible. This undoubtedly accounts in no small degree for the high specific output of which the engine seems capable. (Note: The specific output of an engine means cubic inches per horsepower of piston displacement— or its reciprocal, h.p. per cu. in.) For the *Crosley* it is about 1.7 cubic inches per horsepower, compared with about 2.3 or 2.4 for the 100 horsepower *Ford V-8*. For the Navy-tested Taylor (*Crosley*-type) engine it is around 1.2, or but little less than for some airplane engines. The Navy engine, which as noted has been "tamed down" for the car, develops thus about twice as much horsepower for its size as does the 100 horsepower *Ford V-8*. The capacity of the *Crosley* cooling system is 5 quarts.

The crankcase is of aluminum, weighs 7¾ pounds, and is but 3 inches high. It is stated that the five main bearings occupy less length than would a three-bearing crankcase, which for good bearing area would require a long center bearing. Thrust is taken by the rear bearing, which is the only one of flanged type. All crankshaft and connecting rod bearings are of the precision replaceable type requiring no fitting when installed. The crankshaft is a high strength iron casting, and is thus similar to the material used for *Ford* crankshafts for many years. The oil sump is of steel, with an oil capacity of 4 quarts.

Two types of *Crosley* cars are to be produced, a 2-door sedan seating 4 persons, and a panel delivery. No prices have yet been announced, but one estimate is that the car will sell at about $650. (The pre-war *Crosley's* maximum price was about $550.) If the $650 price holds, we believe the car may be a good value for those who may desire an automobile of its size and other limitations, and who may operate the car under conditions in which its exceptionally small size does not involve special risk.[1] (On heavily traveled main roads and highways, any unusually small car presents very real dangers, chiefly because of the enormous and apparently increasing width, height, length, and road- and traffic-hiding bulk of present-day trucks.)

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[1]For example, if one of these small cars is directly ahead of a truck, a driver who wishes to pass the truck cannot see the small car blocking his expected nosing back into the traffic lane ahead of the truck until it is too late to drop in behind it again. He must, therefore, take the great chance of accelerating and getting ahead of the small car, if something isn't ahead of that, before oncoming traffic meets him. His only alternative is to nose the small car off the road.

Kaiser and Frazer Cars for 1946

WHILE the greatest interest at this time surrounds the "big money" dealings of the Kaiser-Frazer Corporation, rather than the *Kaiser* and *Frazer* cars which presumably are to be produced this year, some information concerning the prospective cars will no doubt be of wide interest to CR subscribers. Only by employing the best engineering and manufacturing talent, combined with large purchases of equipment, machinery, materials, and supplies can the Kaiser-Frazer Corporation hope to be successful in the highly competitive field of making and selling automobiles, which was a big, far-flung business for many years prior to the war and will be with us again on an even bigger scale in a few months or perhaps a year. There are many who do not believe it possible for a new firm to survive against the big-money competition now in operation, with its extensive experience in the techniques of large-scale manufacturing, and marketing. On the other hand, there are some who consider that the magic that is supposed to attend the Kaiser-Frazer name will tend to offset these advantages that lie on the side of companies already in the field. Time alone will settle these questions; in the meantime, a few words about the cars.

The *Kaiser* is to be the "low-price" model; the *Frazer* the higher-bracket car. The two cars will be similar in external appearance, but the wheelbase of the *Kaiser* will be 117 inches and that of the *Frazer* 123½. Both cars are distinctly modern in style, but still a long way from the radical-appearing types anticipated by some of the more imaginative newspaper and magazine commentators. The illustrations of these cars which have appeared in various newspapers and magazines should not be taken too seriously, for these pictures seem to have the abnormally elongated appearances customary with commercial artists' rendering of automobiles, rendering which often has little relationship to the actual proportions of the automobile illustrated.

It so happens that there is no substitute for real wheelbase and overall length in giving a car a long, "sleek" look—regardless of the disadvantages in parking and other problems accruing to cars of greater-than-average length. The wheelbase figures mentioned for the *Frazer* cars are not actually great, but about average for cars in the pre-war price group 7, which, just before the war, included *Oldsmobile 6* and *8*, *Nash Ambassador 8*, *Chrysler 6*, *Buick Special 40*, *Hudson Super 6*. The *Kaiser* wheelbase is about in the class with the pre-war *Chevrolet* and *Plymouth*. The *Kaiser* and *Frazer* body design contains features long advocated by William B. Stout, well-known airplane and automobile designer, while the "production design" is accredited to John A. Maxwell & Associates, of Detroit. The number of stampings is less than are usually incorporated in body construction, and from information reaching us the body work has been well handled. Advantage has been taken of space ordinarily wasted (above fenders and at sides of body) to provide greater seat width, so much in fact that the front seat is 66 inches wide (as compared with a seat width of about 62 inches for some of the larger pre-war cars). (Since four persons can sit on the 66-inch seat, possible legal complications may arise later in states where laws and regulations, never kept properly current with new technical developments by government authorities, limit the number of passengers on the front seat.) The seat width at the hip level is even greater, namely, 72 inches. The rear seat also provides seating space for four persons.

The *Kaiser* car is of unit-body-and-frame design in which there is no separate chassis frame. This construction is similar to that used in *Lincoln-Zephyr* and *Nash 600* cars, and also was used in modified form in the original *Chrysler Airflow* car. Extensive use of tubing (walls 16 gauge, or about 1/16th inch thick) has been made in the construction of some of the body parts. Effort has been made to reduce weight wherever possible, with the result that the *Kaiser* car is said to weigh about 2700 lb. or about 500 lb. less than cars of the *Chevrolet* and *Ford* types, and is also about 500 lb. lighter than the *Frazer*. Rear-end overhang (distance from rear axle to rear of body) appears to be less than in other cars using current styling. If this overhang is actually less than usual, there will be a real advantage in avoidance of scraping that occurs sometimes when a car is driven off a short, steep ramp. Front and rear bumpers extend well around the edges of the fenders, as on many other 1946 cars. Parking lamps are below the headlamps, which are mounted in the fenders.

A principal feature of the *Kaiser* car and one new to American production automobiles is the suspension system; this, which fol-

lows the *Citroen* (French) car, is technically known as the transverse torsion-bar type. However, torsion-bar designs have been developed in this country for buses, and a racing car using longitudinal torsion bars was developed for the Indianapolis Speedway by Lee Oldfield a few years prior to the outbreak of the war. In designs of this type the "springs" are steel rods or bars which absorb shocks by undergoing torsional deflections or twists. Theoretically the action is similar to that of a coil spring, for in such springs the wire or rod constituting the individual coils is subjected to twisting strains when the spring as a whole is deflected compression-wise, in the direction of its longitudinal axis. Various forms of links or arms are attached to the ends of the torsion bars so that the movement of the wheels can cause the twisting action. One end of each bar is rigidly mounted in a bracket on the frame, or in this case the body-frame of the car. The bars are mounted transversely or across the body-frame and arms extend from the end of each bar to the wheel spindles. The length of each bar is not given, but it is probably about 50 inches, and may be more. The torsion bars are used for all four wheels. While each wheel of the *Kaiser* car can move independently of the other three (so that the term "independent suspension" applies to this car), this is not the case with the *Frazer*. The *Frazer* uses a conventional rear axle with two longitudinal leaf springs 53 inches long and 1¾ inches wide, and the now conventional independent suspension, a link arrangement with coil suspension springs for the front wheels. The use of independent suspension for all four wheels will mark up a "first" for the *Kaiser* in American production automobiles, although independent suspension for rear wheels as well as front has long been used in Europe. (The fact that independent suspension has been used in this country only for front wheels led one engineer to conclude that its introduction was largely for initial sales advantage at the time, rather than for any real and substantial benefits to be derived from its use. Employing of this suspension on all four wheels provides a real test of the effectiveness and safety of this method of springing.)

A second feature which will differentiate the *Kaiser* from all other cars in American automobile design practice today is that it will be of front-drive type. (*Cord* was the best known front-drive car in times past, but it survived a relatively short time and is no longer manufactured.) Front drive has many disadvantages as well as advantages, and these should be carefully considered by anyone planning to buy for the first time a front-wheel drive car.

(A discussion of the front-wheel drive as compared with the conventional rear-wheel drive will appear in a forthcoming Bulletin.)

The engines of both the *Kaiser* and the *Frazer* cars are of 6-cylinder type and for the present will be manufactured by the Continental Motors Corp. The *Frazer* is to develop 100 horsepower, while the *Kaiser* is rated at 85 horsepower. Borg clutches are to be used.

Indications are that a 4-door model will be introduced first. Prices, while not established, have been given as $1000 for the *Kaiser* and from $1200 to $1500 for the *Frazer* f.o.b.

At the time this article was being prepared, the Kaiser-Frazer Corporation had not produced any cars on the production line, the very few samples on display being "hand made," perhaps not even mechanically complete; and although the corporation has announced the cars would soon be on display in sales rooms, actual production in any appreciable quantity is likely not to be realized for several months at least. It seems proper to advise CR subscribers that in placing orders for these cars they may be taking a greater than ordinary chance; risk is always necessarily greater with a new product of complex design and difficult manufacture than when buying a corresponding item from an established manufacturer whose cars have been through the mill of use and experience and have had the more serious "bugs" worked out of them "the hard way," by trial and error over a period of years.

★ ★ ★ ★ Babies' Diapers ★ ★ ★ ★

THERE is little doubt that the most important item of baby's wardrobe is the diaper. More diapers are needed than any other single item in the layette, three to four dozen being the quantity commonly recommended. Babies wear diapers twenty-four hours of the day for twelve or fifteen months, or even longer. According to Dr. Frederick F. Tisdall, Associate Professor of Pediatrics, University of Toronto, control of the bladder during the daytime is usually possible by two years of age, and the child should have bladder control at night by three years of age.

Diapers should be absorbent, soft, and light in weight. Because deformities of the thighs may result if diapers make too great a bulk between the legs, it is desirable that diapers should not be bulky. Pinked diaper edges, instead of hemmed ones, are to be preferred for this reason.

Cotton is the most common material used for babies' diapers, because it does not irritate the skin

and because it washes readily. Diapers of rayon plus cotton have been made, but none of this kind were included in CR's tests, since they were not available in the cities shopped when the test purchases were made.

Diaper fabrics are of four types: gauze, birdseye cloth, knit, and flannel. Flannel diapers are practically unobtainable now, but the other three kinds are widely sold. Gauze diapers, which are made in two different weaves (plain-woven and birdseye) are soft, absorbent, and sheer. This sheerness does not make them less absorbent than birdseye cloth diapers, and gauze diapers may be folded to several thicknesses without making them too bulky. Some users have found that it is much simpler to fit gauze diapers tightly around baby's legs than some other types. Gauze diapers are woven with a firm edge and interwoven selvages, and are not hemmed.

Birdseye fabric is characterized by small diamond-shaped figures with a dot (or bird's eye) in the center. It is absorbent and lightweight, although it is heavier than gauze. The birdseye diapers tested averaged about 1¾ ounces in weight per square yard (based on a single thickness of the material). The gauze diapers tested averaged 1.35 oz. per sq. yd. per single thickness of gauze.

Knit diapers are of two different types, tubular and flat knit. In the tubular knit, the needles on the machine are arranged in a circle. Shaping is done by changing the tension of the needles, or by shaping on forms after the goods is knitted. In flat knit, the fabric may be shaped during the knitting process by adding stitches or knitting them together. Tubular knit diapers are of double thickness, and are "serged" (overcast with machine stitching) at the ends to prevent raveling. They do not require folding when fitting them on the baby. Knit diapers take longer to dry than either birdseye or gauze diapers.

The shape of the diaper is largely a matter of the mother's preference. For the oblong type, the most satisfactory size is 20 x 40 inches. Many square diapers are 27 inches each way (torn size, before hemming). The 20-inch length of the oblong diaper does not have to be folded under as long a period of months as does the 27-inch square diaper, but this fold under will give added thickness of absorbent material and be an advantage from that point of view.

Washing and Sterilizing Diapers

Diapers should be kept clean and as sterile as possible. Babies' skins are sensitive and may become reddened or galled or develop a rash if irritated.

For the protection of baby's tender skin it is probably advisable to rinse out new diapers before using them. At least one case has been reported of babies developing a skin rash following the wearing of new, unwashed diapers, and a rinse to remove textile finishes, though it may not always be necessary, would doubtless be a wise precaution.

An easy way to care for diapers is to flush them immediately in the toilet bowl, then drop them into a covered pail which contains a weak borax solution—one tablespoon of borax to a pail of water. A simple and effective method of sterilizing diapers is to wash them well in soap suds, rinse out the suds thoroughly in clear water, or in water to which boric acid has been added (6 tablespoonfuls of the crystal form per pint have been recommended), then boil the diapers. They should be dried in the sun if possible. The use of a chlorine (hypochlorite) solution for sterilizing diapers is not generally recommended because such salts are strong chemicals and may irritate the baby's skin if the solution is not completely and thoroughly removed from the cloth by rinsing. Dr. Tisdall states that a bichloride of mercury (corrosive sublimate) solution made by dissolving one 7½ grain tablet in 2 quarts of water is an effective antiseptic when used as the final rinse water for diapers. This solution is *highly poisonous*, however, and should be used only when necessary and then should be kept carefully out of the reach of children and of everyone who might not appreciate the dangers in handling and using such a material.

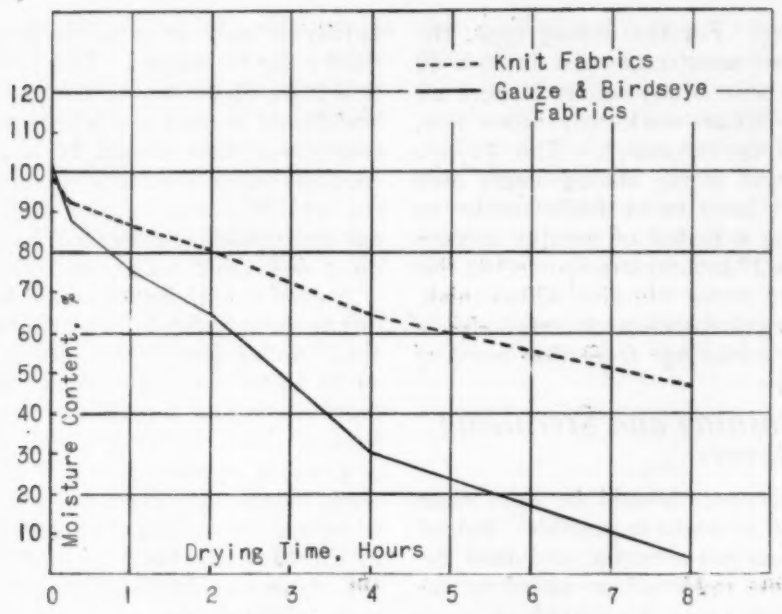
A good rule to follow would be not to use any "disinfectant solution" unless specifically directed to do so by your physician. At least five cases of diaper rash have been reported as being traced to a product marketed under the trade name of "Perm-Aseptic," according to an article appearing in the May 26, 1945, Journal of the American Medical Association. This solution was one used as a final rinse by a diaper service. The rash cleared up in from three to seven days when diapers washed at home were used on the babies, only to reappear when diapers from the diaper service were used again.

CR's Tests

The tests and examinations made by Consumers' Research included *thread count, average breaking strengths in warp and filling directions of the fabric, weight of the fabric, shrinkage,* and *moisture absorption.* Moisture absorption was given the greatest weight in the listings, while percentage total absorption and localized absorption were considered as of equal importance. Localized absorptive qualities of the diapers were determined by allowing water to drip at a constant rate of 15 drops per 10 seconds on a diaper laid over the mouth of a large glass cylinder and counting the number of drops until the first drop fell from the underside of the diaper.

Drying times for the diapers were determined, and the results are illustrated in the graph on page 16. Some diapers were given a use test, and special features were evaluated by this test.

The gauze diapers tested had only about half the tensile strength (in the weakest direction in each



As the graph clearly shows, diapers made of knit fabrics took an appreciably longer time to dry than diapers made of either gauze or birdseye. The last two types took about the same number of hours to dry, and were thus shown as a single line, in preparing the graph.

case) of the birdseye diapers and were considerably weaker than the knit diapers tested. Average breaking strengths (of a single layer of fabric) were:

	Warp	Filling
Gauze	20.4 lb.	26.7 lb.
Birdseye	43.5 lb.	70.5 lb.

	Wale Direction	Course Direction
Knit	45.9 lb.	27 lb.

There were no very significant differences in the tensile strengths of diapers within any particular group. Thus all gauze diapers tested had tensile strengths which fell within a narrow range, and the same was true of the birdseye diapers and the knit diapers tested.

Birdseye diapers may be expected to withstand the effects of repeated washings much longer than gauze diapers, but other advantages of gauze diapers, such as their lighter weight, may outweigh this factor for some mothers.

In the listings, the nominal size of the diaper is given in parentheses after the measured size. Drying time was normal, unless otherwise noted. Ratings are cr45.

A. Recommended

Chix, Down-Weve (Chicopee Sales Corp., 40 Worth St., New York 13) One doz., $2.50. 21¼ x 40 in. (20 x 40 in.). Two layers birdseye gauze, pinked, cross selvages joined in ¼-inch special woven cloth. Thread count, 40 x 46. Average breaking strengths (single layer of fabric): warp, 22 lb.; filling, 29 lb. The strongest gauze diaper tested. Weight per sq. yd., 1.8 oz. Moisture absorption after washing, very good (among two best in this respect of the diapers tested). Localized absorption, good. Little shrinkage. **2**

* * *

Roly Poly (Sears-Roebuck's Cat. No. 29—3074) One doz., $1.89, plus postage. 20 x 40¼ in. (21 x 40 in.). Two layers plain-woven gauze, sides pinked, all selvages interwoven. Thread count, 35 x 42. Breaking strengths (single layer of fabric): warp, 18 lb., filling, 26 lb. Weight per sq. yd., 1.6 oz. Moisture absorption after washing, good. Localized absorption, fair. Some shrinkage. **1**

Ward's Birds-eye (Montgomery Ward's Cat. No. 31—3192) One doz., $1.49, plus postage. 25¾ x 27½ in. (27 x 27 in.). Birdseye cloth, hemmed. Thread count, 64 x 50. Breaking strengths: warp, 46 lb.; filling, 75 lb. Weight per sq. yd., 3.9 oz. Moisture absorption, good. Localized absorption, fair. Little shrinkage. The strongest birdseye diaper tested. **1**

Blue Square. One doz., $2.39. 25⅞ in. x 27 in. (27 x 27 in.). Birdseye cloth, hemmed. Thread count, 63 x 48. Breaking strengths: warp, 42 lb.; filling, 72 lb. Second strongest birdseye diaper tested. Weight per sq. yd., 3.8 oz. Moisture absorption, very good (best in this respect of all diapers tested). Localized absorption, fair. Little shrinkage. **2**

B. Intermediate

Red Diamond (Dundee Mills, Clifton, N. J.) One doz., $2. 25½ x 27 in. (27 x 27 in.). Birdseye cloth, hemmed, with threads tied. Thread count, 67 x 47. Breaking strengths: warp, 43 lb.; filling, 64 lb. Weight per sq. yd., 4.1 oz. Moisture absorption, poor. Localized absorption, good. Some shrinkage. **1**

Cumfy Re-inforced. One doz., $2.50. 19¾ x 40⅛ in. (20 x 40 in.). Two layers plain-woven gauze, pinked, all selvages interwoven. Thread count, 36 x 42. Breaking strengths (single layer of fabric): warp, 20 lb.; filling, 27 lb. Weight per sq. yd., 1.6 oz. Moisture absorption after washing, about average. Localized absorption, fair. Little shrinkage. **2**,

Curity, Layettecloth (Kendall Mills Div. of the Kendall Co., Walpole, Mass.) One doz., $2.50. 20¼ x 40 in. (21 x 40 in.). Two layers plain-woven gauze, pinked, all selvages interwoven. Thread count, 37 x 43. Breaking strengths (single layer of fabric): warp, 22 lb.; filling, 25 lb. Weight per sq. yd., 1.8 oz. Moisture absorption, poor. Localized absorption, good. Little shrinkage. **2**

Vanta, Sterilized (Earnshaw Knitting Mills, Newton, Mass.) Three, 59c. 12 x 15½ in. (shaped). Two layers of flat-knit fabric, bound with stitching, center area padded with two layers of heavier knit fabric. Count (wales and courses), 32 x 34; of center area material, 16 x 25. Breaking strengths (single layer of fabric): 50 lb., 28 lb. Weight per sq. yd., 4.5 oz. Drying time, very long compared with gauze and birdseye cloth diapers, and longest of the group of

3 knit diapers. Moisture absorption, a little lower than average. Localized absorption, very good. Shrinkage in width about average, gain in length excessive. This diaper was not readily adjustable to growing infants, and it was difficult in use to tie threads through eyelets to fasten it on an active baby. This diaper did not fit infant's legs snugly unless safety pins were used. **2**

C. Not Recommended

Phoenix Knit Diaper (Montgomery Ward's Cat. No. 31—3131) One doz., $1.98, plus postage. Tubular rib knit, not shaped. Count (wales and courses), 20 x 23. Breaking strengths: 43 lb., 26 lb. Weight per sq. yd., 5.5 oz. Drying time, long compared with gauze and birdseye cloth diapers, but about equal to another knitted diaper, *Pant-ease*. Moisture absorption, fair. Shrank considerably in both directions and distorted badly in washing. Free water escaped in use test. **1**

Pant-ease Knitted Cotton Form Fitting Diaper (Pant-Ease Infant Wear Co., Arcade, N.Y.) One doz., $2.25. 20½ x 8½ in. (shaped). Tubular rib knit. Principal sections of double thread, fleeced, edges bound. Count (wales and courses), 15 x 15. Breaking strengths: 45 lb., 27 lb. Weight per sq. yd., 6 oz., heaviest of the diapers tested. Moisture absorption, fair. Shrinkage extreme (about 25%) in length, but diaper stretched greatly in width during washing, making it very much out of shape. Free water escaped in use test. **2**

Home Permanent Waves—
Are they safe and satisfactory?

WOMEN with straight hair have yearned for curls or waves for centuries, it appears. Many methods have been used throughout the years, but the invention in 1906 of a method of giving a permanent wave which would not wash out when the hair was shampooed must have appealed to most women as a truly great scientific achievement. The principle involved the use of alkaline substances such as ammonia and borax combined with sulfite compounds to soften the keratin or horny structure of the hair. Then the hair was given permanence in the desired form (when wound on rod curling devices) by the application of heat. Since one side of the hair is stretched in the process of winding, a wave or curl is produced by the uneven stress to which the hair is subjected.

The alkaline ingredient is an important constituent of a permanent wave solution because it breaks through the natural oil present on the surface of the hair and speeds up the softening process. One expert has pointed out, however, that, although the more alkaline the solution the more quickly the softening is achieved, the affect of strong alkali on the hair is quite unfavorable. As a compromise, weak alkalis like ammonium hydroxide are commonly used. The heat may be applied by either mechanical or chemical means.

The original means of applying heat in such cases as used by Charles Nessler, the inventor of the method, was an electrically heated machine. His was known as the spiral method because the rods were perpendicular to the head, and it was considered at the time to be well adapted for long hair and loose waves on top of the head. Some twenty years later, in 1925, a machine was developed by which the rods were placed in a horizontal position. This method, known as the croquignole method, proved to be especially successful with short hair in producing curls at the neck and elsewhere.

Since the process of being literally strung up by the hair of their heads two or three times a year in order to get a permanent was considerable of an ordeal to some women, efforts were made to devise a heatless-type of wave. As late as 1934, Fortune Magazine reported that these attempts had not come to much, but that a machineless wave sold under the name *Zotos* was producing something of a sensation in hairdressing circles. This system, according to Fortune's report, used a chemical which generated the required heat when water was applied. The principle was the same as that used in the chemical heating pads that were popular a decade or more ago. The chief difficulty in giving this type of permanent wave is that the heat cannot be controlled quite so accurately as with the machine-type.

Obviously the machine-type permanent wave method was not adapted for use at home since the winding of the hair on the curling rods was a difficult job even for a skilled operator. Furthermore the ma-

chines were expensive. The machineless-type wave, however, did not involve large outlay for a complicated piece of apparatus, and home-permanent kits began to make their appearance.

Still another development has been a factor in stimulating production of home-permanent kits. Comparatively recently, a cold-wave process has made its appearance that does not require the use of heat but depends for its effectiveness on the use of certain chemicals. One of the earliest methods of giving this type of wave involved the use of a solution of ammonium hydrogen sulfide, which was literally pumped under a tightly fitting cap through the hair wound on curlers. Nation-wide attention was focussed on the new permanent wave process when in April 1941 it caused the death of a woman in Atlanta, Georgia. The Food and Drug Administration took prompt action in seizing all shipments of the particular product which involved the use of ammonium hydrogen sulfide, and its further distribution was forbidden.

Work continued, however, on the development of a heatless wave method, and, as one expert put it, the formulation of permanent wave mixtures that can be made to work at ordinary room temperatures followed the lines of development of depilatories. The essential ingredient of this new "cold wave" is a thioglycollate compound. One form of this chemical, calcium thioglycollate, has been used in several depilatories, including *Irma*, *Nair*, and *Sleek*. It is ammonium thioglycollate that is commonly used in the cold-wave solutions.

Since the hair softening action of this compound if allowed to remain too long will carry the softening of hair to the point of disintegration, it is obvious that great care is needed in using it where such a result is not desired. With respect to its effect on the health of the user, the Food and Drug Administration has, on the basis of animal experiments, passed at least one cold-wave solution as comparatively safe. Three cases, however, of contact dermatitis, attributed to the ammonium salt of thioglycollic acid in a cold-wave solution, were reported in Annals of Allergy, January-February and March-April numbers, 1944. Damage to the hands of beauty operators and irritation to the scalp of patrons may follow exposure to the chemicals used in the administration of the cold-wave permanent process, according to one cosmetic expert.

As for the quality of the permanent turned out by the cold-wave process, it apparently is still somewhat unpredictable and at an experimental stage. Beauty operators report good results with some types of hair and poor success with others. The woman who does not wish to gamble on results will be wise to have a test curl made first—or use another method.

All in all, it is obvious that considerable skill and know-how goes into the giving of a permanent by the cold-wave process. It is exceedingly doubtful that the average woman has had sufficient knowledge of chemistry to be expected to use this type of wave solution at home effectively and safely. It can be readily seen that if she does not take great care to keep her hands and particularly her nails from remaining in contact with the thioglycollate solution for too long a time she may expect an unpleasant softening on one or the other or both. The dangers of leaving the solution too long on the hair are obvious. Certainly at its present stage of development the process had best be left to a highly skilled and competent beauty operator.

The other type of wave which uses heat pads is not completely fool-proof, but in the hands of a women who has some skill in setting her own waves and who is conscientious in following directions, or adapting them to her own needs, reasonably satisfactory results have been achieved. It should be kept in mind, however, that it has been estimated that at least 90 percent of the effectiveness of a particular permanent is attributed to the skill of the operator and that implies stiff competition for the home amateur.

Several of the better known, widely distributed permanent-wave kits were analyzed for their essential ingredients. Their ratings are based on their comparative safety for use by an unskilled person who is not familiar with the scientific caution called for in handling powerful chemicals, although the same materials might be comparatively safe under conditions of commercial use. Ratings are cr46.

B. Intermediate

Charm-Kurl Permanent Wave Complete Home Kit (Charm-Kurl Co., St. Paul) 59c, plus tax. Kit consisted of set of instructions, ball of white cotton, 40 brown curlers, envelope containing 45 curl papers, package of shampoo, permanent-wave chemical, wave set, and rinse tablet. The shampoo powder was found to consist essentially of crystallized trisodium phosphate and dry soap powder. The permanent-wave

chemical was identified as essentially sodium sulfite with traces of sodium sulfate present. The essential ingredient of the wave set was identified as India gum, possibly with an addition of some wetting agent. The rinse tablet was found to be essentially boracic acid plus some orange colored dyestuff. These chemicals are customarily used in the permanent-wave process, and it is believed that none of them is likely to be harmful if the product is used according to directions. It should be borne in mind, however, that the quality of a particular permanent is largely due to the skill of the operator.

Mollin's Permanent Wave (The Mollin Co., St. Paul) 59c, plus tax. Kit consisted of booklet of instructions, 50 brown curlers, package of 50 curl papers, package of shampoo, package of permanent-wave chemical, package of wave set. The shampoo powder was identified as a dry soap powder. The permanent-wave chemical was identified as sodium sulfite with a trace of sodium sulfate present. The wave set was identified as gum tragacanth, possibly with the addition of some wetting agent. The same general comments apply to these chemicals as those made about *Charm-Kurl*.

C. Not Recommended

The following are all based on the use of some form of thioglycollate, which, as indicated in the text, may not be safe for home use by untrained persons.

Charm-Kurl Supreme Cold Wave Home Permanent Kit (Distributed by Fraser Hair Fashions, St. Paul 4) $1, plus tax. Kit consisted of 2 wads of cotton, a set of directions, 60 curlers, 60 curl papers, a 3-oz. bottle of *Supreme Cold Wave*, a package of neutralizing solution. The wave solution was found to contain ammonium thioglycollate. The neutralizing solution was essentially potassium bromate with a small amount of organic acid such as citric acid, and a wetting agent.

Chic Cold Wave Permanent (Distributed by The Linhall Co., St. Paul) 79c, plus tax. Kit consisted of a set of instructions, 45 brown curlers, a package of 50 curl papers, a 2-oz. bottle of wave solution, a package of neutralizer. The wave solution was found to contain ammonium thioglycollate. The neutralizer was essentially potassium bromate with a small amount of an organic salt with an acid reaction, such as potassium bitartrate.

Crowning Glory Cold Permanent Wave (Distributed by L. R. Kallman & Co., Chicago) $2.19, plus tax. Kit consisted of a set of directions, 50 brown curlers, a 3-oz. bottle of cold permanent-wave solution, and a bottle of neutralizing solution. The cold-wave solution was found to contain essentially sodium thioglycollate and sodium carbonate. The neutralizing solution was found to be a solution of hydrogen peroxide.

Portrait Cold Permanent Wave (Distributed by H. H. Tanner & Co., St. Paul) $2, plus tax. Kit consisted of instruction leaflet, 50 curlers, a book of 50 curl papers, a 3-oz. bottle of wave solution, 1 package of neutralizer. The wave solution was found to contain ammonium thioglycollate. The neutralizer was found to be essentially potassium bromate and potassium bitartrate with a small amount of wetting agent.

Powell's Cold Wave Permanent (Wm. H. Powell Manufacturing & Distributing Co., 4228 Cottman Ave., Philadelphia 35) $1, plus tax. Kit consisted of a folder of directions, 50 brown curlers, a 4-oz. bottle of wave solution, 1 bottle of neutralizing solution. The wave solution was found to contain ammonium thioglycollate. The neutralizing solution was found to contain acetic acid and hydrogen peroxide.

FM Reception Stymied by Government Rulings

ALL the nation's FM (frequency modulation) radio stations were to shift operations on January 1 from the old band of 42 to 50 megacycles to the new assignment of 88 to 108 mc. Unfortunately, there would be no listeners on the new band, because sets to receive on 88 to 108 mc. are not yet on the market (and few will be, for a long time), whereas provisions to convert the five or six hundred thousand existing receivers to the new band have not yet been made. (Some months ago the Federal Communications Commission *forbade* manufacturers to produce FM receivers capable of receiving on both bands.)

Labor difficulties and difficulties in getting increased prices which will permit manufacture to be carried on on a profitable basis are among the reasons why, for the time being, FM radio reception will be "out." The consumer is in the unhappy position of having had "forced obsolescence" imposed upon him, in this case by government fiat—a pretty unsatisfactory condition, considering that the government didn't even have anything to gain by the change except possibly to save face for an error of judgment or failure to recognize what the future would bring in the way of a standstill

of radio production. "Informally," Commissioner Jett has stated in a letter to a trade journal that "we do not intend to close the present band until service is generally available in the new band." For a time it was believed that the FCC might permit FM broadcasting to retain its old 42 to 50 mc. band in addition to the newly assigned band (88 to 108 mc.); the Commission "in a surprise move" did call a hearing to consider this question. The result of this hearing was a denial of the request to permit use of both the lower frequency and the 88 to 108 mc. bands. This decision is very important to the public and open to serious objection, as the technical basis upon which the Commission was making the shift of the FM band has been attacked by substantial critics as unsound. (This shift would render obsolete the FM receivers in current use, estimated to number five to six hundred thousand, and to have a value of 50 to 100 million dollars.) There are some reasons to suppose that the FCC's engineering is not quite "up to snuff" and it may be that the Commission, while not publicly admitting an error, will make a concession which will permit the use of the original 42 to 50 mc. band, at least for rural service; it is understood that transmission on the new band may not be fully satisfactory.

★ ★ ★ ★ ★ ★ Carpet Sweepers ★ ★ ★ ★ ★ ★

CARPET SWEEPERS represent one of the few mechanical household appliances that are really back on the market. Some sweepers have been available for several months. Manufacture of this appliance ceased completely in the middle of 1942 due to the effect of War Production Board regulations, and production was not resumed until the latter half of 1943; at that time revisions of the regulations permitted manufacture of models containing limited amounts of steel.

Some well-known manufacturers may still be making models which involve wartime differences in design and materials resembling the substandard or Victory models such as manufacturers were required to make under government regulations during 1943 and 1944 and much of 1945, instead of their regular grade. In February 1946 the Porter Steel Specialties Company had still not resumed manufacture of their regular model sweeper, although they expected to get into production in March.

Usefulness of Carpet Sweepers

Carpet sweepers have advantages in the daily care of rugs since they more quickly and conveniently do a cleaning job where the rug is not really dirty but just shows a bit of surface litter, which may be conspicuous, but actually represents only a very small amount of foreign material. According to one expert, the proper cleaning of fine Oriental rugs calls for an air-suction vacuum cleaner (not a vacuum cleaner that has a revolving brush or beater). For ordinary rugs and carpets, however, it would appear that longer life would be favored if the carpet sweeper is used for daily cleaning and a vacuum cleaner is reserved for more thorough, periodic cleanings.

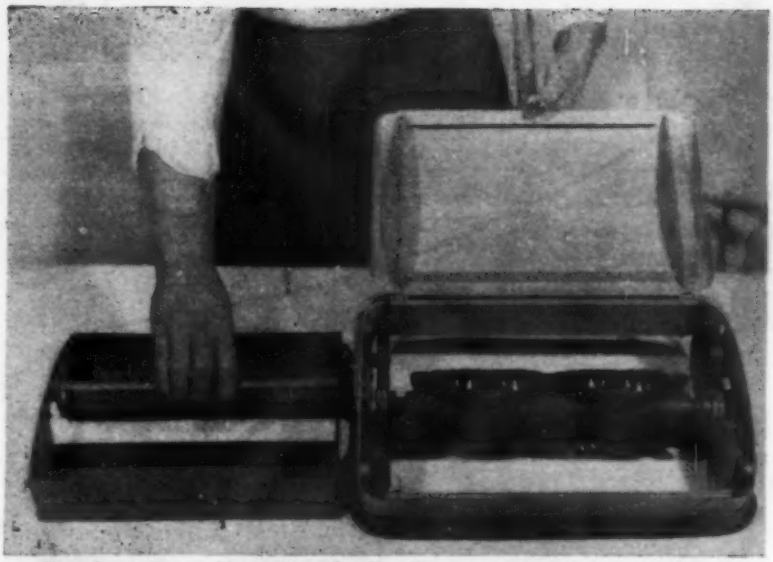
For best results, a sweeper should be pushed with smooth, even strokes, with as little pressure as will do the work. The brush should be cleaned regularly. A clogged sweeper will not pick up litter and dust, and a brush that is matted and tangled with hairs and threads cannot sweep efficiently. Dirt pans should be emptied after each using, and must be emptied after each using if the sweeper is to be stored with the pans in a vertical position, as will often be the case when the sweeper is hung by its handle in a closet or wardrobe. When pans are in this position, the dirt falls from the pans onto the brush, and will in turn fall out on the rug when the sweeper is used again.

Construction of Sweepers Tested

There were three sweepers tested in the present study, the *Bissell Grand Rapids*, the *Landers Speedwell*, and the *Wagner Milwaukeean*. The *Landers* and the *Wagner* had metal cases, while the *Bissell* had a walnut-stained wooden case.

All the sweepers tested had brush-positioning features designed to adapt the sweepers for use on high-, medium-, or low-pile rugs. In the *Landers* sweeper the brush is mounted in movable brackets which in

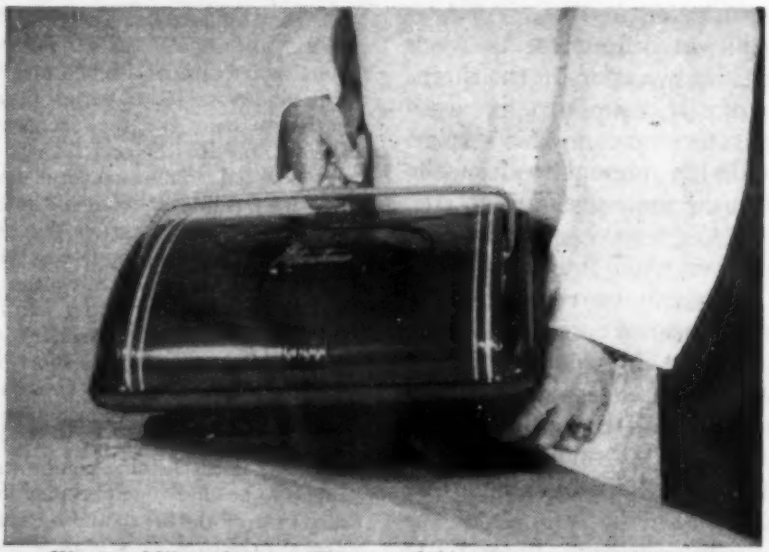
turn are connected directly to the handle. Pressure on the handle brings the brush into closer contact with the floor; when the pressure is released a spring at each end brings the brush back to normal height. In the *Wagner* and *Bissell*, the brushes are also mounted in movable bearings, but in addition the wheels are mounted on movable arms with attached springs, which allow the entire sweeper to move closer to the floor when pressure is applied to the handles. The mechanical arrangement in the *Bissell* called "Hi-Lo Ball Bearing" seems superior to that in the *Wagner* known as "Floating Brush."



Landers, Open Top, Speedwell—*Pans are removed for emptying as a single unit after opening the top. Illustration shows in position the comb which is used when needed, to clean the brush.*

★

On the *Bissell*, a metal bar with a double row of teeth made contact with the brush of the sweeper as it revolved, to deposit dirt in the pans. The *Wagner* sweeper had two pivoted combs which move into and out of contact with the brush, depending on the direction of motion; these were designed to keep the brush clean. The *Landers* had a removable cleaning comb, and the manufacturer's instructions suggested that the comb should be used only when the user wished to free the brush of lint and matted material.



Wagner Milwaukeean—*The pans of this sweeper are emptied by pushing a small clip on the outside corner of each pan. The two pans are emptied separately.*

★

The sweepers had different means for emptying dirt pans and these are explained in the listings and the illustrations. To some extent, the choice between these methods is a matter of personal preference, but the *Landers'* method seems to be the most practical and convenient of the three studied. The *Wagner* sweeper had a window in the top of the metal case which would permit the operator to see when the pans need emptying. In view of the fact that the best practice requires that the pans be emptied after each using, this feature is considered to be of minor value.

CR's Tests

CR's tests included an examination of the construction of the sweepers, and the ease of operating them, and a practical sweeping test. A 100-hour endurance test was also run, and the sweepers were examined afterwards to determine wear on the working parts and bristles. All the sweepers came through this wear test very satisfactorily, and none of

Bissell, Grand Rapids—*Pushing a single plunger on one side of the sweeper (at the right of the picture) empties pans on each side simultaneously.*

★

them showed signs of any significant wear on working parts or the rotating bristle brush.

The sweeping tests were carried out on three types of floor coverings—a used short-pile rug, a new long-pile rug, and linoleum. The rugs were thoroughly and uniformly cleaned with a vacuum cleaner before the tests were made. All surfaces were prepared for test by uniformly sprinkling a "dirt" mixture over a given area. The "dirt" used consisted of sand, pieces of nut shells, cracker crumbs, corn meal, orange seeds, small buttons, cotton linters, long strings, and short wool fibers. Ninety grams of this mixture was used in each test, and an area of about 11 square feet was swept for three minutes.

The results of the sweeping tests on the rugs showed no significant differences between the three sweepers in the quantity of dirt picked up, nor were their efficiencies in this respect noticeably changed after the 100-hour wear test.

Although sweepers will pick up litter from linoleum, none of them can be recommended for this use. Percentages of effectiveness in cleaning for linoleum were less than those for rugs, and the effectiveness of the sweepers on linoleum was achieved only by exerting great pressure on the handles of the sweeper—enough, indeed, to bend the handles. The pressure required on the *Wagner* forced the bottom of the sweeper against the floor, scratching the linoleum badly, and quickly wearing off the directions pasted on the bottom face of the dirt pan. *With ordinary pressure* such as the homemaker would use in normal handling of the sweeper, the sweepers picked up very little of the standard dirt from linoleum; instead, they scattered the sand and corn meal and pushed larger articles, such as buttons, seeds, and bits of nut shell, along the floor.

So far as surface appearance was concerned, all three of the sweepers were about equally effective on the long-pile rug, and all were about equally ineffective on linoleum.

On the short-pile rug, the finished appearance of the surface of the rug was noticeably better after cleaning with one sweeper than another. The *Wagner* left the least dirt and lint showing on the surface of the rug, the *Landers* was second best, and the *Bissell* was the least effective in this respect. Ratings are cr46.

A. Recommended

Wagner Comb-Kleaned Milwaukeean (E. R. Wagner Mfg. Co., 4611 N. 32 St., Milwaukee) $6.50. Painted metal outer case. Case had a celluloid window on top to permit observation of pans and their contents. Weight, 6.9 lb. Second highest of group tested. This sweeper is emptied by pushing down small extensions of the dirt pan on the outside corner of each pan, emptying each pan separately. Sweeper had two pivoted cleaning combs. In the sweeping test, this sweeper left some sand on the surface of the short-pile rug, but cleaned up wool fibers and cotton linters well. First choice of sweepers tested. In the sweeping test, the fixed cleaning combs were found to be effective in keeping long strings from the brush and retaining them in the pan.

Landers, Open Top, Speedwell (Landers, Frary, & Clark, New Britain, Conn.) $6.45. Painted outer metal case. Weight, 8 lb. Pushing force necessary in operating the sweeper, greatest of the three tested. Sweeper is emptied by removing the two pans as one unit after lifting the hinged top of the sweeper. Sweeper had removable cleaning comb (see comment in text). In the sweeping

test, this sweeper left a small amount of cotton linters on the surface of the short-pile rug, and the long strings were picked up and wound around the brush. Surface appearance of short-pile rug after cleaning with this sweeper was judged somewhat better than the appearance after sweeping with the *Bissell* sweeper.

Bissell, Grand Rapids (Bissell Carpet Sweeper Co., Grand Rapids 2, Mich.) $5.50. Wooden outer case, walnut finished. Weight, 6 lb. Pushing force necessary in operating sweeper, lowest in the group (desirable). This sweeper is emptied by pushing a single plunger on the top, which empties pan on each side simultaneously (a satisfactory arrangement). A comb in the form of a metal bar with two rows of teeth in contact with the brush helps remove dirt from brush to pans. In sweeping test, sweeper left some short wool fibers, sand, and linters on surface of rug. The comb did not prevent the long strings which were picked up from winding around the brush.

Good Reproduction *vs.* Wear of Records— *A Study of Phonograph Needles*

In making his selection of a phonograph needle from the several types available on the market, the music lover has several choices to be resolved before he makes his purchase. He needs to decide what factor he considers most important: Convenience, which calls for needles that need to be changed only infrequently; lack of surface noise from the pressure of the needle on the shellac or other material of the record; the best possible quality of reproduction from a particular record; and the amount of wear given prized records by the needle with which they are played.

In an effort to obtain some information on these points, CR had tests made on a number of brands of phonograph needles of various types. These were used in a *Seeburg De Luxe* automatic record changer with Astatic type L-40-A pick-up, having a needle pressure of 1¾ oz., played on *Victor Red Seal* record 11-8762—*American Salute* (Gould. Boston Pops Orchestra under Fiedler. $1). A new record was used for each needle. Magnified profiles of each needle were examined on a micro-projection instrument and compared, after various periods of use, with an accurate tracing of the original shape. The test was considered concluded when either the needle showed excessive wear or the record showed considerable damage. Observations were made on the number of playings at which apparent damage to the record began to appear in the form of a grayish dust in concentric rings where fortissimo or heavy bass or percussion passages were recorded. (Reports of tests of the different types of needles appeared in CR BULLETINS, December 1945, January 1946, and February 1946, respectively.)

Although the tests to which the needles were subjected were by no means exhaustive, it is possible to draw certain conclusions that will be helpful to the average record collector in making his purchase of needles.

1. The Steel and Chromium needles gave the least wear on records but produced the most surface noise and gave the poorest reproduction of the needles tested. The steel needles as a group did not wear so well as the chromium needles; but of the steel needles *Actone* was the best, followed by *Victor Red Seal*. In the chromium group *RCA Victor* Chromium showed the best resistance to wear, with *Columbia* Chromium next.

2. The "Precious Metal" alloy needles gave good reproduction, although they all produced some surface noise. They were more severe in their wear on records than the chromium or steel needles. The *Pfanstiehl* needle gave the largest number of plays (approximately 500) before the point began to show excessive wear. This, however, is very far below 4000 which is the number of plays claimed in its advertising. The poorest in the group was the *Jensen Bent-Shank*, claimed to be good for 5000 playings, which showed signs of excessive wear after 25 playings. All needles in this group showed damage to the record on which they were being played after approximately 150 playings.

3. The jewel point needles as a group gave the best reproduction with a minimum of surface noise, but they caused the most severe record wear. The *Admiral* proved to be the leader of this group in all respects, followed by the *Duotone* "*Star Sapphire.*" The *Walco*

Comparative Summary of CR's Test of Phonograph Needles

(Brands within each group are listed in order of durability; the longest-wearing first.)

Brand Name & Manufacturer	Price	No. of Plays Claimed	No. of Plays at which Needle Showed Excessive Wear	No. of Plays at which Record Showed Damage (Approx.)	Condition of Record at End of Test[1]	Surface Noise Through Speaker	Needle Noise or Scratch[2]
STEEL							
Actone Transcription, Type 130M—Red Shank (H. W. Acton Co., Inc., 370 Seventh Ave., New York 1)	100 for 50c	——	1	A short-lived needle, hence record damage did not occur.		Slightly Noticeable	Noticeable
Victor Red Seal (RCA Manufacturing Co., Camden, N.J.)	50 for 25c	——	1	See comment above		Slightly Noticeable	Noticeable
Duotone Filter Point (Duotone Co., 799 Broadway, New York 3)	12 for 10c	12-15	1	See comment above		Slightly Noticeable	Noticeable
Recoton Phoneedle (Recoton Corp., 178 Prince St., New York 12)	30 for 25c	12 or more	1	See comment above		Slightly Noticeable	Noticeable
CHROMIUM							
RCA Victor Chromium, Green Shank (RCA Mfg. Co.)	6 for 25c	Many	15	See comment above		Noticeable	Noticeable
Columbia (Columbia Recording Co., Bridgeport, Conn.)	6 for 25c	25	10	See comment above		Noticeable	Noticeable
"PRECIOUS METAL" ALLOYS							
Pfanstiehl (Metallurgical Div. Pfanstiehl Chemical Co., Waukegan, Ill.)	$1.50	4,000	500	Approx. 150	Badly worn	Noticeable	Noticeable
Fidelitone (Permo Products Corp., 6415 Ravenswood Ave., Chicago 26)	.50	1,000	150	" 150	Worn	Noticeable	Noticeable
Fidelitone De Luxe (Permo Products Co.)	1.00	5,000	100	" 150	Worn	Slight	Noticeable
Emerson (Emerson Radio & Phonograph Corp., 111-8th Ave., New York 11)	1.00	4,000	70	" 150	Fair	Slight	Noticeable
Jensen Bent-Shank (Jensen Industries, Inc., 737 N. Michigan Ave., Chicago 11)	1.00	5,000	25	" 150	Fair	Slight	Noticeable
SAPPHIRE-TIP							
Admiral Lifetime Precious Jewel (Admiral Corp., Chicago 47)	2.50	——	250	250	Badly Worn	Slight	Slight
Duotone "Star Sapphire" (Duotone Co.)	5.00	10,000	450	100	Badly Worn	Slight	Slight
Walco "Tru Trac" (Electrovox Co., 424 Madison Ave., New York 17)	1.00	5,000	350	100	Badly Worn	Slight	Slightly Noticeable
Capitol (Electrovox Co.)	2.50	10,000	325	100	Badly Worn	Slight	Slight
Walco "Floating Jewel" (Electrovox Co.)	2.50	"Up to 10,000 in most 1941 and 1942 pick-ups of 1¼ oz. needle pressure."[3]	Showed Ragged Wear at 50	100	Badly Worn	Slight	Slight

[1]The number of times that a particular needle was played on a given record varied from 1 playing for each brand in the steel group to 500 for *Pfanstiehl* "Precious Metal" needle.

[2]This is the noise which issues directly from the needle tracking the record without passing through the audio amplifier circuit and the speaker. In a practical sense, this claim is misleading, since few but "professionals" would have a pick-up having these particular characteristics.

"Floating Jewel" gave the poorest performance. It should be noted, however, that not even needles made of sapphire can be considered permanent in any sense of the word and all showed wear after a number of playings far below the number claimed for them by their respective makers or distributors. Jewel needles also present a problem of getting a perfect needle since they are sometimes imperfect and in such cases will ruin a record. Sapphires also develop chips or cracks due to flaws or fatigue failure, and for that reason need to be constantly inspected lest a chipped needle cause irreparable damage to a valuable record.

On the basis of CR's tests, it would appear that the choice of what needle to use is at best a compromise. For convenience and good reproduction the *Admiral* appears to be the best sapphire needle. *Duotone "Star Sapphire"* appears to be the second best, and it can likewise be recommended. A given record played approximately 100 times with this needle, which is widely marketed, was, however, found to be so badly worn that it would need to be discarded entirely. This objection applied to all the sapphire needles tested and to the *Admiral*, except that the *Admiral* lasted about 250 plays before the same amount of record wear was produced as occurred with the other sapphire needles at 100 plays. However, for popular and jazz records that are not to be made a part of a permanent record collection, the sapphire needle will undoubtedly be quite satisfactory.

For cherished records that are to be played at frequent intervals over a long period of time, the *RCA Victor* or *Columbia* Chromium needle, changed after 10 playings, may be the best choice. One expert reports that he can detect a deterioration in the quality of reproduction with these needles after four playings. The *Actone Transcription* and the *Victor Red Seal* steel needles changed after each playing were found to give slightly less surface noise than the chromium group and to be equally satisfactory with respect to wear of records.

The *Pfanstiehl* "precious metal" alloy needle reported in CR's BULLETIN of January 1946, gave an exceptionally large number of playings—having a wear-life comparable with the best sapphires—before wear appeared. A second sample of the *Pfanstiehl* "precious metal" needle, however, showed greater wear than the sapphire needles, wear comparable in amount, for a given number of records played, with that shown by other "precious metal" needles.

The "precious metal" needles consistently produced considerably less wear of the records than any of the sapphires. The best "precious metal" needles, however, did not give quite as good reproduction as the sapphires, nor were they so free from surface noise (as heard through the speaker). In respect to direct needle noise or scratch (which issues directly from the needle tracking the record without passing through the speaker), the "precious metal" and sapphire needles seemed not to differ appreciably. For those who require a long-playing needle the "precious metal" needle perhaps represents the best compromise between the inconvenience due to the short life of the steel and chromium needles and damage to records.

Cactus, fiber, and wooden needles were not included in the test because on the whole they are quite unsatisfactory with respect to quality of reproduction; they are extremely variable, and their durability is very low; they are often incapable of playing a single side before the point is seriously affected by wear.

Off the Editor's Chest

(Continued from page 2)

or in deciding whether a given electric bathroom or auxiliary room heater is a good buy and practicable from the standpoint of cost of current consumed. The need for general and wide-spread knowledge of just what constitutes quality in particular products (not just in a large, general sense) is highlighted by two developments. The first is the general lack of concern of the great majority of buyers, as described by the trade paper columnist already quoted, for good value. It is obvious that if enough consumers are willing to buy uncritically whatever is placed on the counter before them there is no incentive for either manufacturer or merchant to make and sell high-grade articles, that last for a long time and produce results safely and economically. Consumers who have some knowledge and appreciation of quality and how it can be mea-

sured on particular articles and appliances have, therefore, a stake in seeing to it that the schools adopt measures for communicating this knowledge to a wider group.

The second development is the revelation of a business journal earlier this year that the official OPA policy will be to permit wage boosts as "non-inflationary" but hold down prices to the consumer so far as possible. Where an increase in price, however, is forced, in particular cases, to take care of an increase in wages, the OPA was reported as planning to hold their famous price line by a subterfuge, being "hopeful that any further price concessions can be absorbed either by processors or through *downgrading merchandise* [emphasis ours], and that they will leave the consumer's pocketbook largely unaffected."

If the OPA's position is correctly represented here (and we have reason to believe it is), it is obvious that consumers will be faced with the prospect of having the government, for reasons of political expediency, secretly encourage or, at any rate, condone the manufacture of shoddy, inferior, skimped, short-lived, or substandard merchandise. Just how long such a state of affairs will continue depends somewhat on whether Congress decides to extend the wartime price-control powers of the OPA further into the post-war period.

In any event, the problem of getting quality goods back on the market is one that will be with discriminating consumers for a time. The technique of simply strengthening sales resistance that is taught in so many consumer courses in the schools will not be effective at all, for there may be a whole generation of growing young consumers who have never known the values that were to be found on the market in the late 30's in many kinds of products. It will be necessary to see that they are taught what high-quality performance *is*, for example, in a radio set, a phonograph, in soap, in cotton shirts and undergarments, in shoes, and a host of other items. The kind of information that is needed is such as extension workers of the various agricultural and home economics schools and colleges possess in the field of repair and care of household appliances, farm equipment, and similar items. (Perhaps means could be found for making far greater use of their kind of soundly practical knowledge and skills even by "city fellers" in their urban territories.)

The most obvious place to provide such consumption teaching from the new standpoint required by present circumstances is the schools, and the high school and college science courses must carry the greatest responsibility. The subject is one that is a "natural" for those who are preparing courses for newly returning veterans. Since actual knowledge of the techniques of testing and expert rating of goods and appliances and an understanding of just what constitutes quality is required to teach such courses for specific kinds of articles most effectively, it is obvious that the major service to be rendered these future consumers will be in the sciences (especially physics and chemistry), and engineering, domestic science or home management, and in courses in household repair and maintenance.

1946 Table Model Radio Receiver—
The First of the New Crop

CR has already made arrangements to test the new radio receivers as fast as they appear. Indeed, a number are undergoing tests before they are actually available in any significant numbers on the ultimate consumers' market. The accompanying article is a report on the first receiver subjected to test in this series.

THE first of the new radio receivers, an *Admiral*, Model 6T01-6A1, selling at a list price of $27.95 (Zone one), has just been tested by CR. This is a 6-tube superheterodyne table model in a brown plastic case about 13 × 8 × 7 inches in exterior dimensions. The tubes used are as follows: 12SJ7 (RF stage), 12SK7 (IF stage), 12SA7 (first detector oscillator), 35L6GT/G and 12SQ7 (audio frequency stage), 12SQ7 (diode section, detector), and 35Z5GT/G (rectifier).

The audio output (sound volume level) of this set (at 10% distortion—a reasonably distortion limit that can be tolerated on low-priced radios) was unduly low, being only 0.5 watt; the maximum output (with higher distortion) was 1.4 watts.

The band covered in kilocycles was 540 to 1630; loudspeaker, permanent-magnet dynamic; power consumption, 25 watts at 120 volts; audio frequency range (measured electrically, and not including the loudspeaker), 60 to 5000 cycles, with bad distortion below 150 cycles. Judgment of acoustical output: Voice, and lower frequency tones, unnatural, and not pleasant to listen to for any considerable time. (A pre-war table model receiver of comparable type, a Sears *Commentator* priced at

$10.95, had better overall tone quality than this set.)

This *Admiral* set was of somewhat unusual design, in that the radio frequency stage and oscillator circuits were capacity-tuned, while the first detector was tuned with variable inductance.

The receiver had the desirable property of being more selective, because of its RF stage, than the general run of table model radios. Construction appeared good, with parts of standard makes, easily accessible for servicing (which is not true of some of the few makes of receivers now being assembled for the market).

The *Admiral* receiver comprised one significant improvement over the usual ac-dc receivers in that the chassis was not connected directly to the line (a connection which permits a full 110-volt shock to be received in case of accidental contact with interior metal parts) but was grounded through a parallel combination of resistor and condenser, that limited leakage current to approximately 1.5 milliamperes. (This, though still considerably above the safe limit of 0.2 milliampere considered appropriate for new electrical appliances, reduces the shock hazard far below that customary and possible on most ac-dc receivers.)

The following rating is based entirely on the poor tone quality, as in other respects, the set was comparable or superior to other makes of today's radios in this general class and price range.

C. Not Recommended

Admiral, Model 6T01-6A1 (Admiral Corporation, 3800 Cortland St., Chicago 47) List price, $27.95. Six tube ac-dc superheterodyne table model, in plastic case, about 13×8×7 inches in outside dimensions.

How to Buy a Chicken

By I. L. WILLIAMS and B. W. GARDNER

THE CONSUMER wants to know whether to buy his poultry live, dressed, or ready-to-cook. Some people believe that live poultry is the best buy, others contend that you receive more per dollar expended if the chicken is dressed or is all ready to cook. There are, however, those who don't like the apparently excessive price of ready-to-cook poultry and therefore take home the more attractively-priced live or dressed bird. Here are some facts that may help the consumer make a decision.

First the shopper should know what classes of poultry are available. Most of it is divided into three general classes. The first of these is *Broilers and Fryers*, which are young chickens of either sex, ranging in age from 8 to 20 weeks. Their weight ranges from 2 to 3½ pounds, and the meat is sufficiently tender to be cooked by broiling or frying. The second class is

Figure 1

The stamp which is placed on the container of eviscerated or ready-to-cook poultry, showing that the contents have passed inspection, are free from disease, and have been processed under sanitary conditions.

Roasters, which are young chickens of either sex ranging in age from 5 to 9 months, weighing over 3½ pounds, that can be cooked tender by roasting. The third general class includes *Hens or Fowl*. These are mature female birds of any age or weight. *Other Classes* of poultry include cocks (old roosters), stags, and capons. These classes are not so important to the consumer since they are used for canning or are "specialty" items.

Each type of poultry is available to the consumer as live poultry, dressed poultry, or ready-to-cook poultry. *Live Poultry* is just what the name implies. It can be purchased for less per pound than either of the other two types. A good judge of the health and fleshing of the bird, or a person who has the necessary equipment for killing, dressing, and disposing of the waste products, and does not consider the value of the labor required, can purchase live poultry at an advantage. Present living conditions, however, are such that it is doubtful whether the average urban consumer is equipped and willing to go to the trouble and spend the time necessary to kill and dress live poultry.

Dressed Poultry, commonly known as New York dressed poultry, is that which has been

Table I

This table shows the total percentage of the live weight the various classes of poultry will lose during the killing, dressing, and eviscerating operations.

TYPE	PERCENTAGE WASTE		TOTAL, PERCENT OF LIVE WEIGHT
	Live to Dressed	Additional loss, Dressed to Eviscerated, as percentage of dressed	
Broilers and Fryers	14%	31%	41%
Roasters	12%	25%	34%
Hens	10%	21%	29%

killed, and the blood and feathers removed. This is the type of poultry most commonly displayed at the grocery, and contains the head, feet, and internal organs; these must be removed before the bird is ready for cooking. The cost per pound of dressed poultry is less than that for ready-to-cook poultry, but considerable waste and work are required before dressed poultry is ready for cooking.

Ready-to-Cook or eviscerated poultry is becoming very popular, especially with the apartment dweller. This product is ready for cooking, since all the waste parts were removed at the time of slaughter. This type of poultry is produced under the supervision of a government veterinary inspector who examines all birds for evidence of disease or other off-condition. Where there is government inspection, there are certain sanitary standards which a plant must meet before it is allowed to pack this type of poultry. Ready-to-cook poultry is usually individually wrapped and frozen immediately after dressing. The price per pound for ready-to-cook poultry is higher than for the other types, and for that reason it is often turned down in favor of dressed poultry or live poultry.

From the standpoint of the individual consumer, the actual cost per pound of edible meat (*which in poultry is always taken to include the bone*), is often the most important factor for the consumer to consider in deciding which type to buy. The first consideration is the percentage of waste each type of poultry costs the consumer.

The percentage of waste for the various classes of poultry in preparing the bird to eat is shown in Table I. These figures are averages, and there may be a slight variation for any given bird depending on its weight, conformation, and degree of fleshing.

Assume two broilers or fryers weighing a total of 6 pounds, which can be purchased for 28.7 cents per pound or a total cost of $1.72. When these birds are killed, dressed, and eviscerated, 3.6 pounds of edible meat will remain for cooking, which costs *47.8 cents a pound*. If birds of the same quality and weight (dressed weight 5.2 pounds) are purchased dressed, at an initial cost of 37.4 cents per pound or a total cost of $1.94, 3.6 pounds of edible meat will remain after eviscerating which costs *54 cents per pound*. Therefore, with birds that are ready to eat, the cost for having the blood and feathers removed will be 6.2 cents a pound. When purchasing ready-to-cook broilers or fryers, the cost is *55.7 cents per pound*. This makes birds of the same quality and weight (3.6 pounds of edible meat) cost $2.01. These figures show that the edible meat of the ready-to-cook birds cost *7.9 cents a pound more than the edible meat of the live bird* and *1.7 cents a pound more than the edible meat of a dressed bird*.) In these calculations, the details of which are given in Table II, no value has been placed on the time that would be required for the consumer to kill, dress, and eviscerate live poultry or to eviscerate the dressed poultry.)

A 6-pound live roaster at 28.7 cents a pound would cost $1.72. After killing and dressing, 4

Table II—Broilers and Fryers

This table shows the actual cost of the edible meat in **Broilers** *and* **Fryers** *when purchased alive, dressed, or ready-to-cook.*

TYPE	TYPE PURCHASED								
	Live			Dressed			Ready-to-Cook (Evisc'd)		
	Weight (Yield) lb.	Cost* per lb.	Total Cost	Weight (Yield) lb.	Cost* per lb.	Total Cost	Weight (Yield) lb.	Cost* per lb.	Total Cost
Live	6.0	28.7	1.72						
Dressed	5.2	33.1	1.72	5.2	37.4	1.94			
Ready-to-Cook	3.6	47.8	1.72	3.6	54.0	1.94	3.6	55.7	2.01

*The per-pound prices shown are in cents and are wholesale ceiling prices for Chicago for Nov. 1945. Retailers are allowed a mark-up of approximately 20%.

pounds of edible meat will remain, at a cost of *43 cents per pound*. If this bird is purchased dressed, it will cost 37.4 cents per pound or *49.5 cents per pound for edible meat*, which is 6.5 cents per pound more than the live bird. The cost per pound of the edible meat of this same bird *in the ready-to-cook form is 52.6 cents*. Therefore, the actual overall saving by dressing the bird at home is nearly 10 cents per pound for edible meat (which in the case of poultry is defined to include the bones).

A live 6-pound hen purchased for 24.1 cents a pound will cost $1.45. After the consumer has prepared this bird for cooking, 4.3 pounds of edible meat will remain which cost *33.7 cents per pound for edible meat*. This bird may be purchased dressed (5.4 pounds dressed weight) for 32.1 cents a pound which, after preparation, will make it (4.3 pounds eviscerated weight) cost *40.2 cents per pound* or about 6.5 cents a pound more. The ceiling price for a ready-to-cook hen is 45.4 cents per pound; therefore, the saving from killing, dressing, and eviscerating the bird at home is approximately 12 cents a pound. A lesser saving of about 5 cents per pound will result from buying the hen dressed instead of ready-to-cook. The details of calculations on roasters and hens are given in Tables III and IV. Again, the value of the consumer's time in preparing the chicken is not considered.

A summary of the added cost to the consumer over the cost of the edible meat that remains after preparation of the live poultry is given in Table V. Now that it is known what the consumer must pay for the convenience of each type of poultry, the question arises as to the economics of each. Perhaps the best way to determine this is to review the actual cost of producing each of the types of poultry.

In general, it requires 3 cents a pound for the poultry processor to prepare the dressed type poultry and another 3¾ cents to prepare the ready-to-cook type poultry, or a total of 6¾ cents per pound of finished edible meat. A summary of the added cost to the consumer for each type as compared to the processor's cost and the resulting margin is shown in Table V. A study of this table indicates that the processor has his greatest margin when selling dressed chickens. Comparing the margin the processor has on the ready-to-cook type poultry shows that the consumer pays the processor 1¼ cents to a little over 5 cents profit per pound of edible meat, for preparing the poultry. As four pounds of edible meat should be adequate to provide a meal for a family of four, the consumer will actually pay 5 to 20 cents extra to the processor for preparing the poultry for her kitchen. Though it is very difficult to estimate the cost of labor, trouble caused by offal disposal, inconvenience to persons other than the cook, etc., for most consumers, perhaps, it would be logical to assume that it is economical to purchase ready-to-cook poultry. In addition, the 30 to nearly 50

Table III—Roasters

This table shows the actual cost of the edible meat in ***Roasters*** *when purchased alive, dressed, or ready-to-cook.*

TYPE	TYPE PURCHASED								
	Live			Dressed			Ready-to-Cook (Evisc'd)		
	Weight (Yield) lb.	Cost* per lb.	Total Cost	Weight (Yield) lb.	Cost* per lb.	Total Cost	Weight (Yield) lb.	Cost* per lb.	Total Cost
Live	6.0	28.7	1.72						
Dressed	5.3	32.5	1.72	5.3	37.4	1.98			
Ready-to-Cook	4.0	43.0	1.72	4.0	49.5	1.98	4.0	52.6	2.10

*The prices used here are wholesale ceiling prices for Chicago for November 1945. Retailers are allowed a mark-up of approximately 20%.

Table IV—Hens and Fowls

This table shows the actual cost of the edible meat in ***Hens*** *or* ***Fowl*** *when purchased alive, dressed, or ready-to-cook.*

TYPE	TYPE PURCHASED								
	Live			Dressed			Ready-to-Cook (Evisc'd)		
	Weight (Yield) lb.	Cost* per lb.	Total Cost	Weight (Yield) lb.	Cost* per lb.	Total Cost	Weight (Yield) lb.	Cost* per lb.	Total Cost
Live	6.0	24.1	1.45						
Dressed	5.4	26.9	1.45	5.4	32.1	1.73			
Ready-to-Cook	4.3	33.7	1.45	4.3	40.2	1.73	4.3	45.4	1.95

*The prices used here are wholesale ceiling prices for Chicago for November 1945. Retailers are allowed a mark-up of approximately 20%.

Table V

This table is a summary of the additional cost to the consumer in purchasing poultry beyond the cost of edible meat from live poultry, and shows also the cost of processing, and the processors' margin. The figures given are in cents per pound.

TYPE	BROILERS OR FRYERS			ROASTERS			HENS		
	Extra cost to consumer	Processors' cost	Processors' margin	Extra cost to consumer	Processors' cost	Processors' margin	Extra cost to consumer	Processors' cost	Processors' margin
Live to Dressed	+6.2	3.00	+3.2	+6.5	3.00	+3.5	+ 6.5	3.00	+3.5
Dressed to Ready-to-Cook	+1.7	3.75	−2.05	+3.1	3.75	−0.65	+ 5.2	3.75	+1.45
Total Live to Ready-to-Cook	+7.9	6.75	+1.15	+9.6	6.75	+2.85	+11.7	6.75	+4.95

cent additional total cash expenditure (of which 5 to 20 cents is processor profit) for this meal is a very economical form of insurance that the poultry is free from disease and handled under sanitary conditions, since all ready-to-cook poultry is Federally inspected, which is shown by a stamp like that illustrated in Figure 1. This stamp is always prominently displayed on the container.

The Important Problem of Hard Water—

With Discussion of Borax as a Water Softener

As DWELLERS in hard-water districts well know, hard water gives trouble when used for washing and cleaning; the difficulty arises because hard water carries in solution calcium and magnesium salts which were dissolved while the water was flowing over or through the ground. For example, water will dissolve a small amount of limestone, which gives it a content of calcium bicarbonate, and a small amount of the mineral kieserite, which gives it a content of magnesium sulfate. (There are other calcium and magnesium salts which cause hardness but these two are illustrative.) These two salts, commonly present in hard water, react with soap to form *insoluble* and gummy calcium and magnesium soaps, which are about as hard to wash off a surface as the original dirt which was to be removed. Because of the necessity of dealing with the two salts, water softeners frequently contain two compounds, one to take care of the calcium, the other to take care of the magnesium.

A common water-softening method is to add something to the water which will precipitate the troublesome salts present. For instance a widely used commercial treatment is addition of a combination of lime and soda or "soda ash." Lime water is alkaline. It acts upon the magnesium compounds in the water to form magnesium hydroxide, which is then precipitated because of its low solubility in water. Soda (sodium carbonate), on the other hand, precipitates calcium as insoluble calcium carbonate. Unlike the compounds that would have been formed by reaction of the calcium and magnesium compounds with soap, the precipitates formed by the reaction described are not sticky and can be rinsed away. The presence of the precipitates does not interfere with the washing process and permits the soap to serve its purpose as a detergent.

Hard waters vary somewhat in the concentration of salts from one region to another, but the calcium content is practically always equal at least to that of the magnesium, and in most regions, is two to four times as great, which is much the same as saying that limestone is a more commonly occurring rock than kieserite. Because of this, soda ash alone is often sold as a water softener. This removes the calcium but not the magnesium. Washing soda is similar to soda ash, which is a commercial product much used in industry and available very cheaply when bought in large quantities; the washing soda differs only in containing water of hydration (water loosely combined with chemical substances in crystalline form). It is a fairly strong alkali in solution, being more alkaline than soap solution.

This brings us to borax, which is often considered an indis-

Table I

Removal of Calcium Hardness

Water-softening compound	*Formula*	*Calcium compound formed*	*Formula*	*Solubility—grams per 100 ml. of the compound formed*	*Rating*
Washing soda	$Na_2CO_3,10H_2O$	Calcium carbonate	$CaCO_3$	0.0014	Good
Trisodium phosphate	$Na_3PO_4,12H_2O$	Tricalcium phosphate	$Ca_3(PO_4)_2$	0.0025	Good
Borax	$Na_2B_4O_7,10H_2O$	Calcium metaborate	$Ca(BO_2)_2,2H_2O$	0.40	Of no use
Tetrasodium pyrophosphate	$Na_4P_2O_7,10H_2O$	Calcium pyrophosphate	$Ca_2P_2O_7,5H_2O$	slightly* soluble	Very good

Removal of Magnesium Hardness

		Magnesium compound formed			
Washing soda	—	Magnesium carbonate	$MgCO_3,3H_2O$	0.152	No good
Trisodium phosphate	—	Magnesium orthophosphate	$Mg_3(PO_4)_2,4H_2O$	0.02	Poor
Borax	—	Magnesium metaborate	$Mg(BO_2)_2,8H_2O$	insoluble*	Very good
Tetrasodium pyrophosphate	—	Magnesium pyrophosphate	$Mg_2P_2O_7,3H_2O$	insoluble*	Very good
Lime	CaO $Ca(OH)_2$ in aqueous solution	Magnesium hydroxide	$Mg(OH)_2$	0.0009	Good

*These solubilities are so low that they are not ordinarily expressed numerically.

pensable household chemical for the kitchen shelf, and which has been recommended among other uses, as a softener for hard water. Actually it is a poor water softener if used by itself, and according to the directions on the package. The reason is purely chemical. Borax, chemically sodium tetraborate, dissolves in water to form sodium bimetaborate, somewhat equivalent to sodium bicarbonate. To be an effective water softener the metaborates of calcium and magnesium should be insoluble. Actually calcium metaborate in hydrated form—the form in which it would precipitate from aqueous solution—is more soluble than calcium bicarbonate and calcium sulfate, so that such salts would not be affected by addition of borax to the water. Magnesium metaborate, however, is insoluble, so that borax would be an excellent water softener *if* magnesium were the only or the main constituent present. This probably accounts for borax having been used so much in the past. Because *some* precipitate formed on addition of borax to hard water, it was assumed

Table II

Decreasing Order of Alkalinity of Water Softening Agents at 25°C

1 Water-softening compound	2 Concentration in %	3 pH
Trisodium phosphate	0.033	10.8
Washing soda	0.09	10.65
Soap	0.10	10.2
Tetrasodium pyrophosphate	0.01	9.5
Borax	0.033	9.35

The values for pH vary somewhat with concentration, but not to any great extent, as a rule; the same relative position, however, would be held by these compounds, even with fairly wide differences in concentration. Soap solution is included in the list to give an idea of what pH means in terms of its effect on the skin.

that the compound was functioning as intended; yet only a part, often a minor part, of the troublesome materials had been removed. (Remember that normally the calcium hardness is almost always equal to or considerably greater than that due to magnesium.) Borax does have one advantage. It gives a solution which is only mildly alkaline—even less alkaline than soap solution.

Now that the action of borax has been explained it will be seen that a good "general water softener" (if a water softener must be chosen without respect to the actual analysis of the water to be treated) can be made by combining three parts of washing soda with one of borax. If the composition of the hard water is known, the proportions can be adjusted by seeking advice of a waterworks chemist or engineer, or a teacher of chemistry, to conform to the actual proportions of calcium and magnesium present.

Another chemical which has been much used in the past for water softening is trisodium phosphate. This is effective against calcium by precipitation of calcium phosphate, and against magnesium, by precipitation of magnesium hydroxide because of the alkalinity of trisodium phosphate in water solution. A drawback to the use of this compound is that an excess gives a strongly alkaline solution and therefore causes roughening of the hands if they are in frequent contact with such solutions, as in household tasks of dishwashing, scrubbing, laundering, etc.

Sodium pyrophosphate, also called tetrasodium pyrophosphate is a better softener than trisodium phosphate. In lesser amounts this salt forms insoluble pyrophosphates with both calcium and magnesium; when greater amounts are used, those precipitates redissolve, but the calcium and magnesium are still chemically sequestered ("locked-up," and so not available to produce an interfering action with the soap used).

The efficiency of a compound in removing calcium and magnesium can be interpreted directly from the solubility, or rather the low solubility, of the new compound formed by reaction, as shown in the table.

Some of the water-softening compounds are more alkaline than others, which means that they have a more caustic or drying action on the hands (by removal of the natural oils of the skin). This property is expressed quantitatively in terms of pH, a measurement of intensity of acidity or alkalinity which can be made readily in the chemical laboratory with instruments that are in common use in research and industry. (High pH corresponds to a high degree of alkaline-activity or "effective alkalinity" of the alkali present.) A neutral substance (for example, rainwater or freshly-distilled water) free from alkalinity, has a pH of 7. The pH values for the water-softening agents under discussion, in the percentage concentration named, are shown in each case in column 2 of Table II.

Soap solution with a pH of 10.2 has little drying effect on the skin due to its alkalinity, except by prolonged contact. Trisodium phosphate solution, on the other hand, is much more alkaline, having a pH of 10.8. (An increase of one number on the pH scale, as for example from a pH of 10 to one of 11, corresponds to a tenfold increase in the effective alkalinity of the substance measured.) Frequent contact of the hands with such a solution, meaning 3 or 4 times a day as in dishwashing, would be apt to cause irritation and redness. Washing soda in solution is also a fairly strong alkali, so that this too might give trouble with frequent use. Tetrasodium pyrophosphate and borax are only mildly alkaline and have a lower pH than plain soap solution, hence are relatively "easy on the hands." Since borax is the least alkaline of the compounds listed, it is sometimes referred to by writers of textbooks and government bulletins as the

"safest" to use, but this has little meaning, since it refers only to the alkalinity of the compound alone in solution. The implication is that anything more alkaline is less safe, which does not necessarily follow, since the whole question depends upon the material or fabric which is being cleansed or laundered by the water that has been treated with a softening material or detergent.

When water softener is added to hard water, reaction occurs with the formation of new compounds, some of which precipitate while others remain in solution. If just enough of the water-softening agent is used to form the maximum amount of precipitate, no alkalinity would be formed by the addition. When used in a greater amount than required for reaction, the solution acquires the alkalinity of the excess reagent. It is therefore better to choose a compound with a milder reaction, other things being equal, since in practice an exact match of the amount of treating material to the amount of water to be treated and its hardness never occurs, and some excess of the treating material is nearly always used, for convenience and to make certain that the hardness is fully dealt with.

The low alkalinity of borax alone does not constitute a sufficient basis for recommending it, since it is effective only to a minor extent with most water supplies, that is on the magnesium hardness. Tetrasodium pyrophosphate is more efficient because it disposes very efficiently both of calcium hardness and magnesium hardness; like borax, it can be used in excess without causing an unduly high degree of alkalinity.

There are some other water-softening materials which have been developed and put into use recently. These work on a different principle from those already mentioned in that they do not remove calcium and magnesium as insoluble precipitates, but form soluble complex compounds with them. Excess of tetrasodium pyrophosphate works in this way. Sodium hexametaphosphate[1] is very effective in this respect and an excess does not make the water alkaline. During the war, the Armed Forces made extensive use of this material.

A new product which acts the same way as the metaphosphate is called *Nullapon B*.[2] This is a complicated organic compound—ethylene diamino polycarboxylic acid—which "locks up" calcium and magnesium as soluble complex compounds. While this was developed for commercial use in the textile industry, it may eventually become available as a household item. Chemists look forward to the availability of many convenient and efficient chemical specialties for home use in the reasonably near future.

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[1]Sold under the name of *Calgon*, by Hall Laboratories Inc., 300 Ross St., Pittsburgh.

[2]General Dyestuff Corp., 435 Hudson St., New York 14, New York.

Desk Pen Sets Discussed

Some Are Fair and Some Are of Little Value

PARTLY in an attempt to fill the gap caused by the great shortage of fountain pens in the market, a number of desk pen sets have been marketed in recent months. One of these is the *Swivodex*, which has a pear-shaped ink reservoir set in a black glass base. Inside the reservoir is a rubber plunger device which gives a limited pumping action when the pen is pushed downward so as to depress the rubber piece. This pumping action wets the pen and fills its point with ink sufficient to write about 200 words. Although this idea has some merit in providing a uniform degree of wetting of the pen and also in solving in part the problem of encrustation of ink around the base of the pen holder which characterizes many of the other desk sets (especially the type which has been widely sold, which utilizes an ordinary ink bottle turned upside down in a base unit), it did not work out satisfactorily in daily use. One practical reason for this is that unless the pumping operation was done with the reservoir in a vertical position, the pressure exerted tended to make the whole device slide away from the user, and there were no rubber or other frictional pads on the bottom which would tend to keep it in position.

Of the three *Swivodex* sets given practical use tests at CR, the point of two was satisfactory; that of the other was

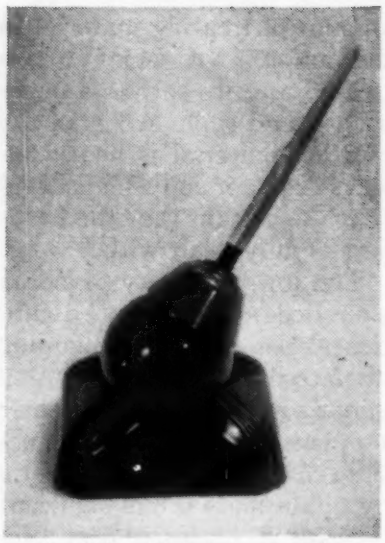
scratchy and did not give a good flow of ink. On two of the sets, the lower end of the feed bar was so near the tip of the pen that when the pen deflected in writing, the feed made contact and marked the paper when used at a normal writing level, a fact which, of course, should have been noticed in factory inspection. The pen was also loose in one holder, possibly due to contraction of the plastic encasement, so that it slipped back under pressure.

C. Not Recommended

Swivodex (Zephyr American Corp., 2 W. 46 St., New York 19) $3. Several faults of design. Found unsatisfactory in use (see text).

* * *

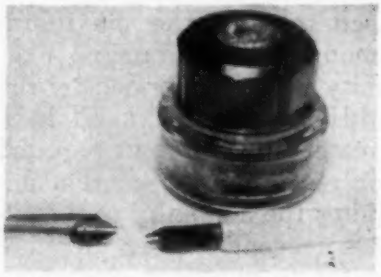
Before the war, consumers were accustomed to buying pen holders or "one-dip" pens containing stainless steel points, which gave considerable service, often for several years, before noticeable corrosion set in. When the use of stainless steel for this purpose was prohibited because of extreme wartime demands for this steel by munitions manufacturers, pens of non-stainless metal were made and these looked much as the good ones used to. The accompanying photograph shows what happens to one of the wartime "one-dip" fountain pens after a short period of use.



A widely sold desk-pen set of unsatisfactory design.

Though these were sold as genuine "non-corrosive" gold-plated points, they succumb rapidly to the corrosive influence of ordinary ink. The same period of use of the pre-war stainless steel pen would have produced no noticeable deterioration whatever.

Since a good many pens of this low grade and type have been sold and are still on the market, the consumer should remember that gold plating does *not* protect a steel pen from corrosion. It merely makes it more attractive to the buyer, by suggesting the corrosion-resisting properties of pure gold.



"One-dip" inkwell and two badly corroded steel pens of the type sold as "non-corrosive."

Abridged Cumulative Index of Previous 1946 Issues Consumers' ResearchBulletins

†indicates that listings of names or brands are included.

Ratings of Motion Pictures

THIS section aims to give critical consumers a digest of opinion from a wide range of motion picture reviews, including the motion picture trade press, leading newspapers and magazines—some 19 different periodicals in all. The motion picture ratings which follow thus do not represent the judgment of a single person, but are based on an analysis of critics' reviews.

The sources of the reviews are:

Box Office, Chicago Daily Tribune, The Christian Century, Cue, Daily News (N.Y.), *The Exhibitor, Harrison's Reports, Mademoiselle, Motion Picture Herald, National Legion of Decency List, Newsweek, New York Herald Tribune, New York Times, Parents' Magazine, Release of the D.A.R. Preview Committee, Successful Farming, Time, Variety* (weekly), and *Unbiased Opinions of Current Motion Pictures* which includes reviews by the General Federation of Women's Clubs, the American Legion Auxiliary, National Film Music Council, and others.

The figures preceding the title of the picture indicate the number of critics who have been judged to rate the film A (recommended), B (intermediate), and C (not recommended).

Audience suitability is indicated by "A" for adults, "Y" for young people (14-18), and "C" for children, at the end of each line.

Descriptive abbreviations are as follows:

adv—adventure
biog—biography
c—in color (Technicolor or Cinecolor)
car—cartoon
com—comedy
cri—crime and capture of criminals
doc—documentary
dr—drama
fan—fantasy
hist—founded on historical incident
mel—melodrama
mus—musical
mys—mystery
noc—dramatisation of a novel
rom—romance
soc—social-problem drama
trav—travelogue
war—dealing with the lives of people in wartime
wes—western

A	B	C		
—	6	8	**Abbott and Costello in Hollywood**	*mus-com AYC*
—	7	1	**Abilene Town**	*mus-wes AY*
1	3	3	**Adventure**	*mel A*
—	1	2	**Adventure for Two**	*dr AYC*
—	3	7	**Adventures of Rusty**	*dr AYC*
—	1	10	**Allotment Wives**	*war-mel A*
1	4	—	**Along the Navajo Trail**	*mus-wes AYC*
7	9	—	**Anchors Aweigh**	*mus-com-c AYC*
1	13	2	**And Then There Were None**	*cri-mys A*
—	1	5	**Angel Comes to Brooklyn, An**	*mus-com A*
—	1	7	**Apology for Murder**	*cri-dr A*
3	3	1	**Appointment in Tokyo**	*war-doc AY*
—	5	2	**Arson Squad**	*cri-mel AYC*
—	11	4	**Back to Bataan**	*war-dr A*
—	3	1	**Bandits of the Badlands**	*wes A*
—	1	3	**Barge-Keeper's Daughter, The**	*com A*
1	5	1	**Battle for Music**	*mus-doc AYC*
—	4	7	**Beautiful Cheat, The**	*mus-com A*
—	5	2	**Because of Him**	*mus-dr A*
—	2	3	**Behind City Lights**	*dr A*
—	2	3	**Behind Green Lights**	*cri-mel A*
6	7	2	**Bell for Adano, A**	*war-dr A*
7	9	2	**Bells of St. Mary's, The**	*dr AYC*
—	5	10	**Bewitched**	*dr A*
—	3	1	**Black Market Babies**	*mel A*
—	1	4	**Blazing the Western Trail**	*mus-wes AYC*
3	9	3	**Blithe Spirit**	*com-c A*
—	—	9	**Blond Ransom**	*mus-com A*
—	1	6	**Border Badmen**	*wes AYC*
—	2	6	**Boston Blackie's Rendezvous**	*mel A*
—	1	2	**Both Barrels Blazing**	*mus-wes AYC*
—	7	—	**Breakfast in Hollywood**	*mus-com A*
2	1	—	**Burma Victory**	*doc A*
6	9	4	**Captain Eddie**	*biog-dr AYC*
—	7	9	**Captain Kidd**	*mel AYC*
—	2	5	**Captain Tugboat Annie**	*mel AYC*
—	5	10	**Caribbean Mystery, The**	*mys-mel A*
—	—	5	**Castle of Crimes**	*mys-mel A*
—	7	5	**Cheaters, The**	*dr AYC*
—	7	8	**Christmas in Connecticut**	*com A*
—	2	6	**Club Havana**	*mus-mel A*
—	2	1	**Code of the Lawless**	*wes AYC*
1	8	1	**Col. Effingham's Raid**	*dr A*
—	2	4	**Come Out Fighting**	*com AYC*
1	5	7	**Confidential Agent**	*war-mel A*
—	11	2	**Cornered**	*war-mel A*
—	2	1	**Corpus Christi Bandits**	*wes AYC*
—	—	3	**Crazy Knights**	*cri-mel AYC*
—	6	3	**Crime Doctor's Warning, The**	*mys-dr A*
—	4	5	**Crimson Canary, The**	*mus-dr A*
—	5	6	**Dakota**	*mel A*
—	6	5	**Daltons Ride Again, The**	*wes AYC*
—	4	8	**Danger Signal**	*mel A*
—	2	6	**Dangerous Intruder**	*cri-mys A*
—	8	7	**Dangerous Partners**	*mel A*
—	4	2	**Danny Boy**	*dr AYC*
—	3	—	**Deadline at Dawn**	*cri-mel A*
—	4	3	**Detour**	*cri-mel A*
—	—	3	**Diary of a Chambermaid**	*dr A*
—	7	2	**Dick Tracy**	*mel A*
—	6	2	**Doll Face**	*mus-com A*
—	10	6	**Dolly Sisters**	*mus-com-c A*
—	5	11	**Don Juan Quilligan**	*com A*
—	7	—	**Don't Fence Me In**	*mus-wes A*
1	14	4	**Duffy's Tavern**	*mus-com A*
—	4	6	**Easy to Look At**	*mus-com AYC*
—	8	5	**Enchanted Forest, The**	*fan-c AYC*
—	—	4	**Face of Marble**	*cri-mel A*
—	4	8	**Falcon in San Francisco**	*cri-mys A*
1	2	6	**Fall of Berlin**	*war-doc A*
1	4	7	**Fallen Angel**	*mys-mel A*
—	—	5	**Fatal Witness, The**	*cri-mel A*
—	2	2	**Fear**	*cri-mel A*
—	1	2	**Fighting Bill Carson**	*wes AYC*
—	7	8	**First Yank into Tokyo**	*war-dr A*
—	1	4	**Flame of the West**	*wes A*
—	—	3	**Flaming Bullets**	*mus-wes AYC*
—	1	4	**Flying Serpent, The**	*mel A*
—	6	5	**Follow That Woman**	*cri-mel A*
—	1	2	**Frontier Feud**	*wes AYC*
—	8	4	**Frontier Gal**	*mus-wes-c A*
—	3	8	**Frozen Ghost, The**	*mys-mel A*
—	5	5	**Game of Death, A**	*cri-mel A*
—	1	4	**Gangs of the Waterfront**	*cri-mel AYC*
—	1	2	**Gangster's Den**	*wes AYC*
—	5	4	**Gay Senorita, The**	*mus-com AYC*
—	6	11	**George White's Scandals**	*mus-com A*
—	6	4	**Getting Gertie's Garter**	*com A*
—	4	4	**Girl No. 217**	*war-dr A*
—	3	6	**Girl of the Limberlost**	*mel AYC*
—	1	6	**Girl on the Spot**	*mus-dr AY*
—	1	5	**Girls of the Big House**	*cri-mel A*
1	9	6	**Guest Wife**	*com A*
—	1	4	**Guy Could Change, A**	*dr A*
—	2	3	**Half-Way House, The**	*fan A*
1	10	2	**Harvey Girls, The**	*wes-mus-com-c A*
1	4	12	**Her Highness and the Bellboy**	*rom AYC*
—	10	7	**Hidden Eye, The**	*cri-mys AYC*
—	1	4	**Hit the Hay**	*com AYC*
—	3	11	**Hold That Blonde**	*com A*
—	—	3	**Hotel Reserve**	*war-mel A*
—	2	9	**House of Dracula**	*cri-mel A*
5	11	—	**House on 92nd St., The**	*war-mel AYC*
—	2	3	**How Do You Do?**	*mus-cri-com A*
—	2	6	**I Love a Bandleader**	*mus-dr AYC*
—	—	5	**I Ring Doorbells**	*cri-mel A*
2	12	2	**Incendiary Blonde**	*mus-mel A*
1	5	6	**Isle of the Dead**	*mys-mel A*
—	5	3	**It Happened at the Inn**	*mel A*

A	B	C		
—	5	9	**Jealousy**	*mys-mel A*
—	10	6	**Johnny Angel**	*mys-mel A*
—	5	2	**Johnny in the Clouds**	*war-dr A*
1	2	—	**Journey Together**	*war-doc AY*
—	2	9	**Jungle Captive**	*mel A*
1	14	3	**Kiss and Tell**	*com A*
2	7	2	**Kitty**	*dr A*
—	4	9	**Lady on a Train**	*mys-com A*
4	12	1	**Last Chance, The**	*war-dr A*
—	3	3	**Last Hill, The**	*war-dr A*
—	3	2	**Lawless Empire**	*wes AYC*
3	4	7	**Leave Her to Heaven**	*dr-c A*
—	5	1	**Letter for Evie, A**	*war-com A*
—	4	5	**Life with Blondie**	*war-com AYC*
—	2	2	**Lightning Raiders**	*wes AYC*
—	2	1	**Lone Texas Ranger, The**	*mus-wes AYC*
—	1	4	**Lost Trail, The**	*wes AYC*
3	10	3	**Lost Weekend, The**	*nov A*
—	1	9	**Love, Honor and Goodbye**	*com A*
2	12	4	**Love Letters**	*war-dr A*
—	2	4	**Love on the Dole**	*dr A*
—	3	1	**Madonna of the Seven Moons**	*dr A*
—	3	8	**Mamma Loves Papa**	*com A*
—	3	8	**Man Alive**	*com A*
—	8	—	**Man from Oklahoma**	*mus-wes AYC*
—	6	6	**Man in Grey, The**	*dr A*
—	7	1	**Marie-Louise**	*war-dr AYC*
—	1	2	**Marshal of Laredo**	*wes A*
—	8	6	**Masquerade in Mexico**	*mus-com A*
—	2	1	**Meet Me on Broadway**	*mus-com A*
—	4	9	**Men in Her Diary**	*com A*
—	4	6	**Mexicana**	*mus-com A*
2	9	6	**Mildred Pierce**	*dr A*
—	2	4	**Military Secret**	*war-mel A*
1	5	2	**Miss Susie Slagle's**	*dr AYC*
—	3	2	**Muggs Rides Again**	*mel AYC*
—	11	3	**My Name is Julia Ross**	*cri-mys A*
2	3	5	**My Reputation**	*dr A*
—	—	3	**Navajo Kid**	*wes AYC*
—	3	—	**Navajo Trail, The**	*wes AYC*
—	5	4	**On Stage Everybody**	*mus-com AYC*
—	2	1	**Once There Was a Girl**	*dr A*
—	3	6	**One Exciting Night**	*cri-com A*
—	4	4	**One Way to Love**	*com A*
2	13	—	**Our Vines Have Tender Grapes**	*dr AYC*
—	3	2	**Out of the Depths**	*war-mel AY*
—	—	7	**Outlaws of the Rockies**	*mus-wes AYC*
—	11	4	**Over 21**	*com A*
1	7	5	**Pardon My Past**	*com A*
—	8	4	**Paris Underground**	*war-mel A*
—	1	9	**Penthouse Rhythm**	*mus-com A*
—	4	6	**People are Funny**	*mus-com AYC*
—	3	6	**Pillow of Death**	*cri-mel A*
—	3	3	**Portrait of Maria**	*dr A*
—	1	2	**Prairie Rustlers**	*wes AYC*
2	12	2	**Pride of the Marines**	*war-dr A*
—	2	7	**Prison Ship**	*war-mel A*
—	6	5	**Pursuit to Algiers**	*mus-mel AYC*
—	3	9	**Radio Stars on Parade**	*mus-com AYC*
—	—	5	**Red Dragon, The**	*mys-mel AYC*
—	2	1	**Return of the Durango Kid, The**	*mus-wes AYC*
8	4	5	**Rhapsody in Blue**	*mus-biog AYC*
—	—	5	**Rhythm Round-Up**	*mus-wes AYC*
—	—	4	**Riders of the Dawn**	*mus-wes AYC*
—	2	9	**River Gang**	*mel A*
—	2	4	**Road to Alcatraz**	*cri-mys AYC*
—	6	1	**Road to Utopia**	*mus-com A*
—	—	5	**Rockin' in the Rockies**	*mus-wes AYC*
1	3	1	**Rough Riders of Cheyenne**	*wes AYC*
—	1	4	**Rustlers of the Badlands**	*mus-wes AYC*
—	—	—	**Rusty (See Adventures of)**	
—	5	2	**Sailor Takes a Wife, The**	*com A*
—	9	1	**San Antonio**	*mus-wes-c AYC*
4	7	4	**Saratoga Trunk**	*mel A*
—	4	5	**Scarlet Street**	*mel A*
—	3	3	**Scotland Yard Investigator**	*mys A*
A	B	C		
—	2	8	**Senorita from the West**	*mus-rom AYC*
—	—	5	**Sensation Hunters**	*mel A*
4	8	—	**Seventh Veil, The**	*dr A*
—	4	3	**Shadow of Terror**	*cri-mel A*
—	2	2	**Shadow Returns, The**	*cri-mel A*
—	10	2	**Shady Lady**	*mus-dr A*
—	2	4	**Shanghai Cobra, The**	*cri-mys A*
—	5	4	**She Went to the Races**	*com A*
—	8	4	**She Wouldn't Say Yes**	*com A*
—	3	2	**Shock**	*cri-dr A*
—	3	5	**Sing Your Way Home**	*mus-com A*
—	10	5	**Snafu**	*com A*
—	—	3	**Song of Old Wyoming**	*mus-wes-c AYC*
—	2	1	**Song of the Prairie**	*mus-wes AYC*
—	—	4	**South of the Rio Grande**	*mus-wes AYC*
1	8	5	**Southerner, The**	*soc-dr A*
—	11	5	**Spanish Main, The**	*adv-c A*
8	5	1	**Spellbound**	*dr A*
—	3	5	**Spider, The**	*mys-mel A*
3	4	—	**Spiral Staircase, The**	*cri-mel A*
—	1	2	**Springtime in Texas**	*mus-wes AYC*
—	—	4	**Stagecoach Outlaws**	*wes AYC*
4	12	1	**State Fair**	*mus-com-c AYC*
1	13	1	**Stork Club, The**	*mus-com A*
—	—	—	**Strange Affair of Uncle Harry (See Uncle Harry)**	
—	2	7	**Strange Confession**	*cri-mys A*
—	1	3	**Strange Holiday**	*war-dr A*
—	2	2	**Strange Mr. Gregory, The**	*cri-mel A*
—	1	2	**Stranger from Santa Fe**	*wes AYC*
—	—	4	**Strangler of the Swamp**	*cri-mel A*
—	6	1	**Sunbonnet Sue**	*mus-dr AYC*
—	5	1	**Sunset in El Dorado**	*mus-wes AYC*
—	3	—	**Swing Parade of 1946**	*mus-com A*
—	3	6	**Swingin' on a Rainbow**	*mus-com A*
—	2	6	**Tahiti Nights**	*mus-com A*
—	6	1	**Tars and Spars**	*mus-com A*
—	4	3	**Tell It to a Star**	*mus-com A*
—	2	8	**Ten Cents a Dance**	*mus-com A*
—	3	2	**Texas Panhandle**	*wes AYC*
—	6	9	**That Night With You**	*mus-com A*
6	8	1	**They Were Expendable**	*war-mel AYC*
1	7	6	**This Love of Ours**	*mel A*
—	—	3	**Three in the Saddle**	*mus-wes AYC*
—	4	1	**Three Strangers**	*mel A*
—	2	4	**Three's a Crowd**	*cri-mel A*
—	—	5	**Tiger Woman, The**	*mys-mel A*
—	4	3	**Tokyo Rose**	*war-mel A*
1	4	1	**Tomorrow is Forever**	*dr A*
—	8	5	**Too Young to Know**	*dr A*
—	2	1	**Trail of Kit Carson**	*wes AYC*
—	—	3	**Trouble Chasers**	*com A*
7	5	—	**True Glory, The**	*war-doc A*
—	11	6	**Uncle Harry**	*cri-mel A*
—	5	3	**Up Goes Maisie**	*com AYC*
—	2	1	**Ural Front, The**	*war-dr A*
1	9	1	**Vacation from Marriage**	*war-com A*
—	3	—	**Virginian, The**	*wes-c AYC*
—	3	4	**Voice of the Whistler, The**	*mys-mel A*
3	5	3	**Walk in the Sun, A**	*war-dr AYC*
—	5	4	**Wanderer of the Wasteland**	*wes AYC*
2	10	1	**Way Ahead, The**	*war-dr A*
—	2	3	**We Accuse**	*war-doc A*
2	10	5	**Weekend at the Waldorf**	*mus-com A*
1	12	3	**What Next, Corporal Hargrove**	*war-com AYC*
1	13	1	**Where Do We Go from Here?**	*mus-fan-c A*
—	3	6	**Whistle Stop**	*mel A*
—	1	7	**White Pongo**	*mel AYC*
—	3	5	**Why Girls Leave Home**	*mus-mel A*
—	2	2	**Wildfire**	*wes-c AYC*
—	4	6	**Within These Walls**	*soc-dr A*
—	9	4	**Woman in Green, The**	*mys-mel AYC*
—	3	5	**Woman Who Came Back, The**	*mel A*
—	7	9	**Yolanda and the Thief**	*mus-com-c A*
—	11	5	**You Came Along**	*war-mus-dr AYC*
—	2	3	**You Can't Do Without Love**	*mus-mys AYC*
—	—	3	**Youth Aflame**	*dr A*
2	4	1	**Ziegfield Follies**	*mus-com-c A*

The Consumers' Observation Post

[Continued from page 4]

they offer satisfactory proof in writing that the metal used in the process is free from lead. According to the New Hampshire bulletin, reputable re-tinning concerns still operate in New England that are aware of the danger and do not use harmful alloys for this work.

* * *

CONSUMER NEEDS in the immediate post-war period are far greater than the average person supposes. It is estimated there is a backlog of demand for 12 million automobiles, or the equivalent of three years of record-breaking automobile manufacturing plant capacity. Had consumer durable goods been manufactured in the period 1942-1944 inclusive, 10 million refrigerators would have been produced, 16-1/2 million electric irons, 41 million radios, 82 million clocks and watches, 6 million washing machines. Six and one-half million couples have been married during the four war years, and a high proportion have not set up housekeeping, but will wish to do so in the immediate future. Thus the social and economic effects of the continuing shortage of goods are very serious, for, practically speaking, a home without adequate equipment is unsatisfactory, and people who have poor home surroundings are more likely to seek change and entertainment in "juke joints," and similar places that are often not conducive to the best conditions of family living and bringing up of children.

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THE HOME MECHANICS HANDBOOK, by a number of authors, including Di Bernardo, Haines, Adams, Bailey, and Nowak (D. Van Nostrand Co., Inc., publisher, 1945, $5.95) is an exceptionally good book in a field in which there are many books, but not very many satisfactory ones. While the book is written for a somewhat more advanced handyman audience than the average home repair book, it is nevertheless quite usuable by persons with only a modest knowledge of tools. It goes much further in its discussions of materials and methods than any other book in this field known to us, and covers important home operations and hobbies which are often omitted in other homecraft books. Among the more important subjects treated are paint, painting, stain, shellac, varnish, and brushes, wall papering, automobile refinishing, working with wood (145 pages), working with metals (150 pages), plumbing (99 pages), masonry (132 pages), electrical operations and wiring (136 pages). This new book would be a most acceptable birthday present for the man who takes pride in his skill and ability on jobs about the home.

NEW PRODUCTS: Superfatted Basis Soap (Duke Laboratories, Inc., Stamford, Conn.) according to an advertisement in the American Medical Association's Journal was asserted, when used with Nivea Creme or Skin Oil, to "keep your skin smooth, free from seasonal irritation." According to the findings of an analysis made for Consumers' Research, the soap would be rated as a high-grade toilet soap in a class with Bridal Bouquet, Camay, Cashmere Bouquet, Fashion Cold Cream. Basis Soap was found to contain a small amount of unsaponified fat, making it slightly "superfatted"; this is considered a desirable characteristic in toilet soap.

Solvay Super Detergent is a gray-white powder sold in barrels and represents a typical formula for industrial cleansing materials such as might be used in factories, schools, hospitals, and other institutions. Analysis shows that the "super detergent" consists of about 80% pumice, 10% sodium carbonate (or washing soda), and 5% soap (a soda soap), the rest being moisture.

Wards Damp Proof Linoleum Cement (Montgomery Ward's Cat. No. 72--603, 49c for 1 qt.) was found to be a black, very viscous, tar-like substance having the odor of benzol. Analysis showed that the product was a solution of asphalt in benzol, substantially free from inert fillers and similar materials. The product dried quite readily to a medium-hard, non-sticky film, and should serve its purpose satisfactorily, being suitably resistant to the action of water and dampness. It should be noted, however, that the relatively high percentage of benzol which the product contains, makes it potentially dangerous to the user when applied under any conditions where very good ventilation cannot be afforded or the room, with proper ventilation provided, closed off from the rest of the house and left unused until the solvent has fully evaporated. Benzol, also known as benzene (second syllable spelled with an e, not an i), is a highly toxic solvent which has given much difficulty with causing illness and death in industrial use. (As little as 2 to 3 parts of benzene in 100,000 parts of air has caused loss of consciousness.)

Hold-Tite Cement is sold by hardware and houseware dealers and others as a material for mending china, bric-a-brac, glass, marble, etc. It is a light-brown colored viscous alkaline liquid having the odor of fish glue. Analysis indicated that its composition is approximately 50% water, 40% sodium silicate (or waterglass), and 10% glue. The product was found to be satisfactory as a cement for china or glass, provided the joint is not subjected to water (or continued dampness). However, when samples were glued together and allowed to dry for 24 hours according to the instructions and were then immersed in cold water, the joint lost strength in about half an hour, and came apart in about an hour. The product, therefore, would appear to be useful only for cementing articles that remain reasonably dry, or are wetted for only short intervals.

PHONOGRAPH RECORDS

By Walter F. Grueninger

Please Note: Prices quoted do not include taxes. In the ratings AA indicates highly recommended; A, recommended; B, intermediate; C, not recommended.

ORCHESTRA

Beethoven: *Leonore Overture No. 3* (3 sides) & *Prometheus Overture* (1 side). NBC Symphony Orchestra under Toscanini. Victor Set SP-2. $2.25. Great overture, breathtaking performance, good recording. The lively filler, though not top-notch Beethoven, is very welcome. Overall, two extraordinary records. I question the value, however, of the two-pocket, illustrated, paper folder for which the buyer must pay 25 cents extra with this and other "Show Piece" sets.
Interpretation AA
Fidelity of Recording A

Bernstein: *Jeremiah Symphony.* St. Louis Symphony Orchestra under Leonard Bernstein, with Nan Merriman (mezzo-soprano). 6 sides, Victor Set 1026. $3.50. Concise, dramatic, but uninspired work. Brilliant performance conducted by the composer. Spacious recording. **Interpretation AA**
Fidelity of Recording AA

Debussy: *Sacred and Profane Dances* (3 sides) & **Ravel:** *Introduction and Allegro* (3 sides). Victor Set 1021. $3.50. Marcel Grandjany (harp) and the Victor String and Chamber Orchestra under Sylvan Levin. Prosaic performance of French works composed in 1904 and 1905 featuring the then new chromatic harp.
Interpretation B
Fidelity of Recording A

Haydn: *Symphony No. 98* (7 sides) & **Mendelssohn:** *Scherzo* (from Octet, Op. 20) (1 side). NBC Symphony Orchestra under Toscanini. Victor Set 1025. $4.50. One of mature Haydn's best symphonies played beautifully, plus an exciting filler. Outstanding set which tops the competitive Columbia 370 (not listed in latest Columbia catalog).
Interpretation AA
Fidelity of Recording A

Milhaud: *Protée—Symphonic Suite No. 2.* San Francisco Symphony Orchestra under Monteux. 6 sides, Victor Set 1027. $3.50. Five pieces which will appeal to few, arranged from incidental music to Claudel's play. **Interpretation AA**
Fidelity of Recording A

Rachmaninoff: *Isle of the Dead* (5 sides) & *Vocalise* (1 side). Boston Symphony Orchestra under Koussevitzky. Victor Set 1024. $3.50. Somber symphonic poem after Boecklin's painting. Understanding performance and splendid recording. Melodious filler. **Interpretation AA**
Fidelity of Recording AA

Ravel: *Bolero* (3 sides) & **Massanet:** *Thais—Meditation* (1 side). Robin Hood Dell Orchestra under Kostelanetz. Columbia Set X257. $2.50. My choice of the many *Bolero* recordings is Victor Set 793 because of the slow tempo preferred by Ravel—4 sides required. Kostelanetz's performance is faster, better recorded. Overside, the popular intermezzo.
Interpretation A
Fidelity of Recording A

Tchaikovsky: *Nutcracker Suite.* Philadelphia Orchestra under Ormandy. 6 sides, Victor Set 1020. $3.50. Ballet music loved the world over. This is the *Nutcracker* to buy. Comparison with the older Stokowski-Philadelphia recording, Victor Set 265, reveals less surface noise in the new set, a few more highs, slightly greater dynamic range, one awkward "break"—hardly sufficient difference for purchasing the new set. Of course, the superiority of the new set is far more obvious when compared to the pre-electric-recording, three movement Victor Herbert conducted recording, Victor 45053!
Interpretation AA
Fidelity of Recording AA

Tchaikovsky: *The Swan Lake.* St. Louis Symphony Orchestra under Golschmann. 10 sides, Victor Set 1028. $5.75. Dull music, when heard without benefit of ballet. Pedestrian performance. "Foggy" recording, due, probably, to hall echo. Slightly more desirable than competitive Columbia Set 349.
Interpretation B
Fidelity of Recording B

Verdi: *La Forza del Destino*—Overture. NBC Symphony Orchestra under Toscanini. 2 sides, Victor 11-9010. $1. The maestro makes the most of this uninteresting work.
Interpretation AA
Fidelity of Recording A

Waldteufel: *The Skater's Waltz.* NBC Symphony Orchestra under Toscanini. 2 sides, Victor 11-8949. $1. A popular concert waltz played with distinction. **Interpretation AA**
Fidelity of Recording A

INSTRUMENTAL

Dvorak: *Humoresque* & **Massanet:** *Thais—Meditation,* Mischa Elman (violin). 2 sides, Victor 11-8950. $1. Popular encore numbers performed with "schmalz," warm tone, too little musicianship.
Interpretation B
Fidelity of Recording AA

Liszt: *Liebestraum No. 3* & **Debussy:** *Clair de Lune.* Jose Iturbi (piano). 2 sides, Victor 11-8851. $1. Celebrated numbers. The beautiful playing of *Liebestraum* is offset by the sharp, jerky performance overside. Excellent recording.
Interpretation B
Fidelity of Recording AA

Liszt: *Mefisto Waltz* (3 sides) & **Albéniz:** *Evocacion* (1 side). William Kapell (piano). Victor Set SP-11. $2.25. Virtuoso performance of fascinating music in the case of the featured waltz, with a pleasant filler. **Interpretation AA**
Fidelity of Recording A

VOCAL

Brahms: *Alto Rhapsody.* Marian Anderson (contralto) and San Francisco Symphony Orchestra under Monteux. 4 sides, Victor Set SP-13. $2.25. Melancholy music previously recorded by Miss Anderson with the Philadelphia Orchestra in 1939 on a 12 inch and a 10 inch disc as part of Victor Set 555. Victor states that for the benefit of the vastly increased public using automatic changers, the new recording was made on two 12-inch discs (25 cents more for discs, 25 cents more for "Show Piece Album"). Miss Anderson's voice is "darker" in the new set, particularly desirable in this selection. Performance and recording of the new set just a little superior to the old.
Interpretation AA
Fidelity of Recording AA

LIGHT, POPULAR, AND MISCELLANEOUS

Nancy Noland (vocalist). 6 sides, International Records D127-132 (in album). $3.50. Miss Noland's voice is unpleasant; she takes astonishing liberties with the music. Her songs are the kind you hear in nightclubs. Included are "Coquette," "How Did it Get So Late So Early," "That Old Black Magic," etc. **Interpretation C**
Fidelity of Recording AA

South of the Border. Morton Gould and His Orchestra. 8 sides, Columbia Set 593. $3.50. It is unlikely these familiar numbers have been played by any orchestra of greater virtuosity. My only complaint is the fancy orchestration, though it is not as objectionable as usual. Included are "Brazil," "La Cumparsita," "Jarabe Tapatio," "El Rancho Grande," "Adios Muchachos," etc. **Interpretation AA**
Fidelity of Recording AA